

Designing With a Municipal Maintenance Mindset:
a Seattle Parks Case Study

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Abstract

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By focusing on landscape maintenance considerations, public park design can synchronize with available maintenance resources, leading to the prolonged success of a design's original intent. By using an asset-based approach to embrace the bureaucratic constraints of municipal maintenance departments, landscape designs can creatively engage with the material realities of maintenance, leading to a new set of design strategies. This project explores small-scale maintenance strategies that can be applied to small-to-medium, neighborhood parks across the Seattle Parks and Recreation Department (SPR). This study first looks at existing maintenance design theories, then identifies the specific dynamic between landscape design and landscape maintenance at SPR, and finally applies those findings to propose maintenance design interventions. A literature review collects the current thinking on the role of maintenance in landscape design practice and offers a conceptual platform for this work. The dynamic between design and maintenance at SPR is identified through autoethnographic reflection of this researcher's experience as a maintenance worker for SPR, followed by interviews with maintenance workers and designers at SPR. It concludes with field observations of sample parks. Results from these methods reveal salient themes about the interplay between designed landscapes and their maintenance. Those results are then applied through proposed design interventions meant to amplify and augment the existing good work of SPR maintenance workers.

DESIGNING WITH A MUNICIPAL MAINTENANCE MINDSET



A SEATTLE PARKS CASE STUDY

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Chapter 1: Introduction



“The space between intent and reality is one of the great, unexplored regions of our discipline... This frontier beckons landscape designers to chart and mold its topography, and to make the conceptual leap down from the spectator’s tower and into the dirt.” (Davis, 2013, 295)

Project Overview

Framing the Research Topic

The relationship between landscape design processes and landscape maintenance operations is a rich area of study to explore ways of improving the compatibility between public parks and the resources available to maintain them (see Figure 1.1). Too often park designs prove to be incompatible with the resources available for their maintenance, which can result in a dynamic of disappointed designers and frustrated maintenance workers (Brickman 1982; Davis 2013; Valkenburgh 2013; Woodward 2008, Interviews from this study). The landscape architecture profession operates at the early phase of a landscape's lifespan by setting up material and spatial arrangements. Landscape architects establish a set of initial conditions, but their involvement is typically limited once a project is signed off on and released by the contractor. Maintenance workers continue to engage with a landscape after its construction, altering, revising, and changing forms and materials through standard maintenance operations. The goal of this research project is

to look at the gap between a site's design and its maintenance to find opportunities to enrich both the design outcomes and the ongoing maintenance operations.

This thesis explores this gap between design and maintenance in the context of the Seattle Parks and Recreation Department (SPR). This focus on a public parks department is an intentional choice because such departments come with a built-in maintenance apparatus that lends itself to the kind of analysis and investigation I undertake in this project. The context of a public parks department is also a standard component of many professional landscape architecture projects, enhancing the chance that the findings and recommendations generated through this study are relevant to the profession.

In order to increase the relevancy of this study's findings, the observations, analysis, and recommendations all take into account the existing constraints that limit the landscape design and maintenance options. These constraints include budget, staffing levels, availability of material resources, and limited horticultural knowledge among others. This study strives to have a positive attitude toward these constraints. The municipal context necessitates a design paradigm that embraces



Figure 1.1 Landscape architects should consider maintenance workers as they design. Image by author.

administrative and budgetary constraints as a creative force rather than a frustrating roadblock. Such an asset-based approach leverages the skills, tools, and resources currently available. This approach aims to cultivate and celebrate municipal maintenance designs that are maintainable with available resources.

Aims of Research

This study aims to develop a maintenance design paradigm tailored to SPR. It aims to acknowledge and understand the current relationship between landscape design and maintenance, and elucidate the constraints and challenges inherent in this relationship. It also aims to integrate maintenance knowledge into the design process and integrate design knowledge into the maintenance process. This two-way integration is demonstrated by applying research findings to: 1) recommend changes to the typical design process, and 2) develop formal design typologies that integrate research findings. These findings will shine a light on the generative potential of a maintenance focus and show that it is inextricable from design.

This study also seeks to align maintenance practices with the same values that drive landscape design: achieving ecological and social health, cleaning the air and water, reducing environmental damage, and providing social benefits for all people. By improving the relationship between design and maintenance, the upkeep of public parks can become more sustainable, using fewer resources and extending respect for all people by supporting the wellbeing of maintenance workers. An understanding of public space as maintained space must be made explicit through designs that highlight the work that goes into caring for them. This approach is necessary to realize landscapes that acknowledge, respect, and care for the expertise and labor of maintenance workers. Improving the relationship between design and maintenance would also result in more sustainable landscapes that are less costly to maintain.

Research Questions

Several questions guided this study. These questions, listed below, provide a logical sequencing to this inquiry and a structural organization to the research where knowledge was built from one question to the next.

- What is the current relationship between landscape design and landscape maintenance at SPR?
- What needs to be considered when designing

neighborhood parks in Seattle with maintenance in mind?

- Which maintenance design methods are suitable for neighborhood parks in Seattle?
- How can Seattle's neighborhood parks be designed based on a maintenance design framework?

Research Scope

This study focuses specifically on maintenance of planted areas in small to medium sized developed, neighborhood parks (see Figure 1.2). “Developed” is used within the SPR to define parks that include a significant amount of constructed elements such as hardscaping, playgrounds, outdoor furniture, structures, and other

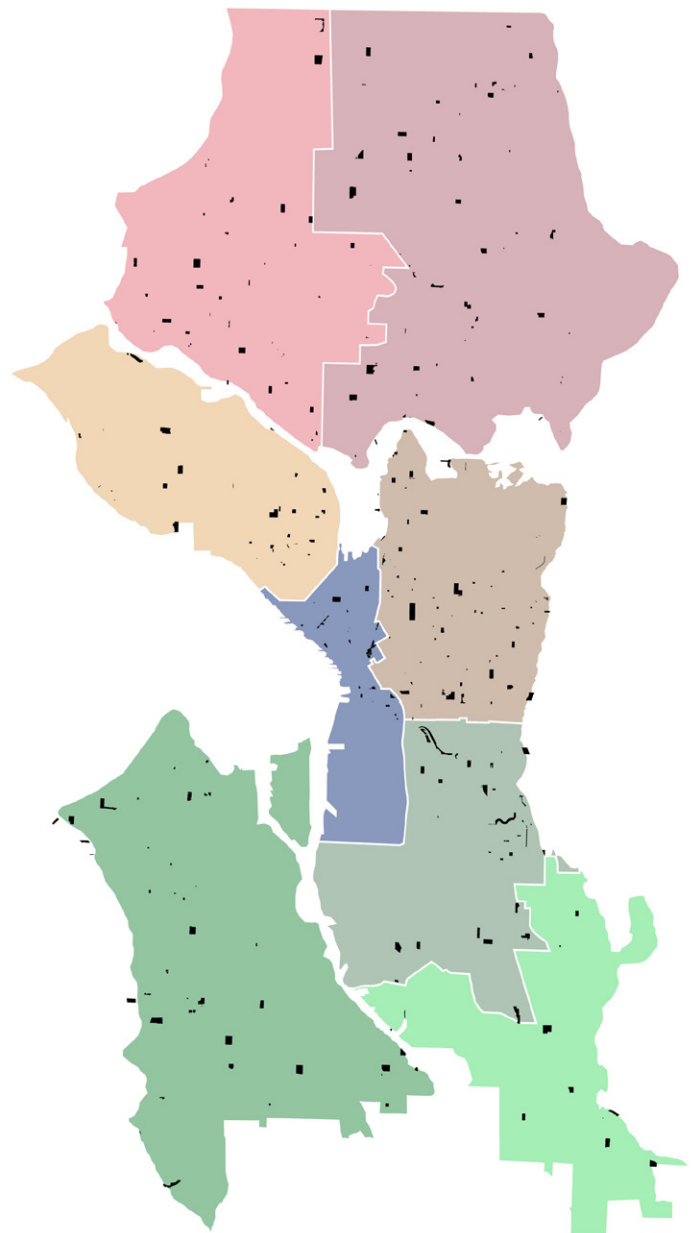


Figure 1.2 All the small to medium developed parks (eight acres or less) in Seattle. Image by author.

built features. The opposite of developed parks are “natural areas.” Vegetation maintenance is the focus because this type of maintenance directly relates to landscape design, particularly design strategies for determining the size, shape, and distribution of planted areas as well as the planting plan for those areas. Designed planting areas require relatively high levels of landscape maintenance. Therefore, planted areas in public parks provide a useful focus area to understand designer/maintainer dynamics. Planted areas also embody the ecological and social values of landscape design. Landscape designers count on plants to clean the air, clean the water, provide cooling, sequester carbon, ease anxiety, host wildlife, nourish pollinators, and many more benefits. The array of benefits stemming from planted areas aren’t realized if plant communities aren’t healthy, and their health is upheld through landscape maintenance operations.

The focus on the category of small to medium sized developed neighborhood parks is based on the park definitions provided in the 2014 Seattle Parks and Recreation Parks Legacy Plan (PLP). The PLP breaks Seattle’s parks into 8 categories:

- Mini parks/pocket parks
- Neighborhood parks
- Community parks
- Regional parks/large urban parks
- Downtown parks
- Boulevards/Green streets/Trails
- Greenbelts/Natural Areas
- Special-use parks/Specialty gardens

The focus of this study is on small to medium neighborhood parks classified here as “mini/pocket parks” and “neighborhood parks.” Neighborhood parks are usually about the area of a city block. Mini/pocket parks are anything smaller than this. The size of these parks is significant in relation to maintenance because these parks do not benefit from an economy of scale whereby robust infrastructure and proximity of work sites, at a larger park, increase efficiency and decrease costs. There tend to be more of these parks compared to other, bigger parks and they tend to be farther from the maintenance shop. The overall number and distribution of these parks make it more difficult for crews to maintain them due to the travel time between them. This means that their maintenance relative to their size involves more transportation and logistical planning. Energy and resources are spread thinner when it comes to maintaining small to medium sized neighborhood parks,

compared to bigger parks. As a result, these smaller, harder to reach parks are more expensive to maintain (see Figure 1.3). Bigger parks tend to get more attention because crews can get a lot done in a single location without driving all over town, or swapping out specialized tools for each park. Also, many of these larger parks have a more robust maintenance infrastructure on site in the form of maintenance access roads, equipment storage and maintenance facilities, and bulk material storage. The size and distribution of small to medium neighborhood parks also preclude planted areas big enough to be resilient to disturbances, so they are more susceptible to weed encroachment or other harmful forces.

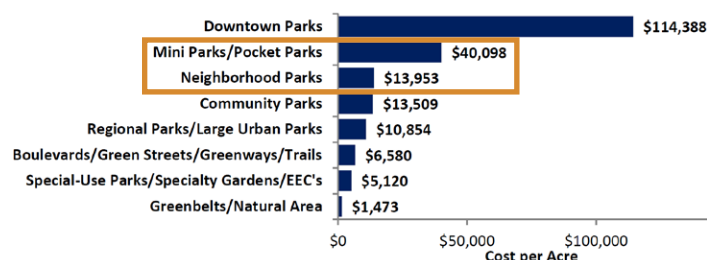


Figure 1.3 Maintenance cost per acre, organized by park category, 2011. Source: Seattle Parks Legacy Plan.

Another significant feature of these small to medium parks is the types of vegetated areas they tend to have. These vegetated areas are mainly turf, shrub beds, paved paths, and trees. The vegetated areas classified as “turf” and “shrub bed” fall into the higher maintenance categories because they require the highest percentage of total maintenance hours (see Figure 1.4). For neighborhood parks, turf accounted for 25.5%, and shrub beds 15.6% of maintenance. Compare this to tree maintenance which accounts for less than 2% (PLP, 2014).

Most recent SPR acquisitions also tend to be small to medium developed neighborhood parks. It’s unlikely another regional park as big as Discovery Park or Carkeek Park will be added to the inventory of SPR because vast swaths of undeveloped parkland just aren’t available anymore. New parks are smaller, so a study aimed at improving future design tactics ought to center around the kinds of parks that will be designed in the future. Take the acquisition, in December, 2024, of a parcel the size of a single city block in North Beacon Hill (Council Bill 120922). This is exactly the size and context that is categorized as a “neighborhood park” according to the criteria from the PLP. For this reason, small to medium parks are my focus to better understand the overlap between design and maintenance.

Neighborhood Park Maintenance by Asset (Parks Resources only)	
Asset	Percent of Total
Turf Maintenance	25.5%
Litter - Garbage	24.2%
Hedges - Shrub Beds	15.6%
Comfort Stations	7.8%
Athletic Fields	6.8%
Hard and Soft Surfaces	6.3%
Other Activity Hours	3.1%
Irrigation	3.0%
Play Areas	2.8%
Natural Area Maintenance	2.0%
Tree Maintenance	1.7%
Picnic Areas	0.6%
Park Fixtures and Furnishings	0.2%
Sport Courts	0.2%
Beach and Shoreline, Water Features	0.1%
Trail Maintenance	0.1%

Figure 1.4 Percentage of neighborhood park maintenance resources per category, vegetation maintenance highlighted. Source: Seattle Parks Legacy Plan.

Research Design

Foundational Research

In order to meet the aims of this project and provide answers to the research questions, this study employs a few different approaches and research methods (see Figure 1.5). The first step of this thesis research is to understand the current municipal maintenance paradigm as it relates to landscape design. This is achieved through a contextual study of existing knowledge about SPR and a more general literature review on the topic of maintenance design. The study of SPR is important to establish the specific constraints and processes that dictate the ways landscape design and maintenance interact. This information is represented and organized through mapping and diagramming. This foundational knowledge is important to establish a common language

when conducting interviews with SPR staff. A working knowledge of the organizational structure of the SPR is also important for the final step of this research project (developing design interventions based on research results) because a primary goal of this study is to develop realistic design strategies that respond to known constraints. The general literature review is essential to place this project into a broader conversation. The literature review contains findings from a broad range of studies, including theoretical discussions, design case studies, and dispatches from industry practitioners. The two categories of SPR-specific research and general research combine to provide the foundation of knowledge for this research project.

Data Collection and Observation

The second type of research conducted for this thesis employs methods that gather new data about this topic. These methods include autoethnography, interviews, and sample site analysis. Each distinct data collection method focuses on gathering a different type of knowledge: first-hand experiential knowledge from autoethnography, expert knowledge from interviews, and observable knowledge from sample sites; but these three methods also overlap in interesting ways. The sample sites provide the landscapes for the direct observations and the autoethnographic reflection. The sample sites also provided tangible examples to spark discussions during the interviews. The interaction of these 3 methods enrich and strengthen results by informing one another. For example, autoethnographic insights provide talking points during interviews, sparking conversation. And sample site observations are supplemented by both autoethnographic experiences and the experiences of interview participants. The combination of methods also provides an added level of analysis where findings and patterns are corroborated across methods.

Application of Findings

The final phase of this project focuses on applying findings to proposed design interventions. These proposed interventions follow from the identification of Design Process Recommendations and Maintenance Design Guiding Principles synthesized from research findings. The Design Process Recommendations bridge the gap between landscape designers and maintainers to pinpoint opportunities for increased collaboration between the two groups. Design interventions are grounded in the specific conditions of each of the four sample sites, but also represent general typologies that

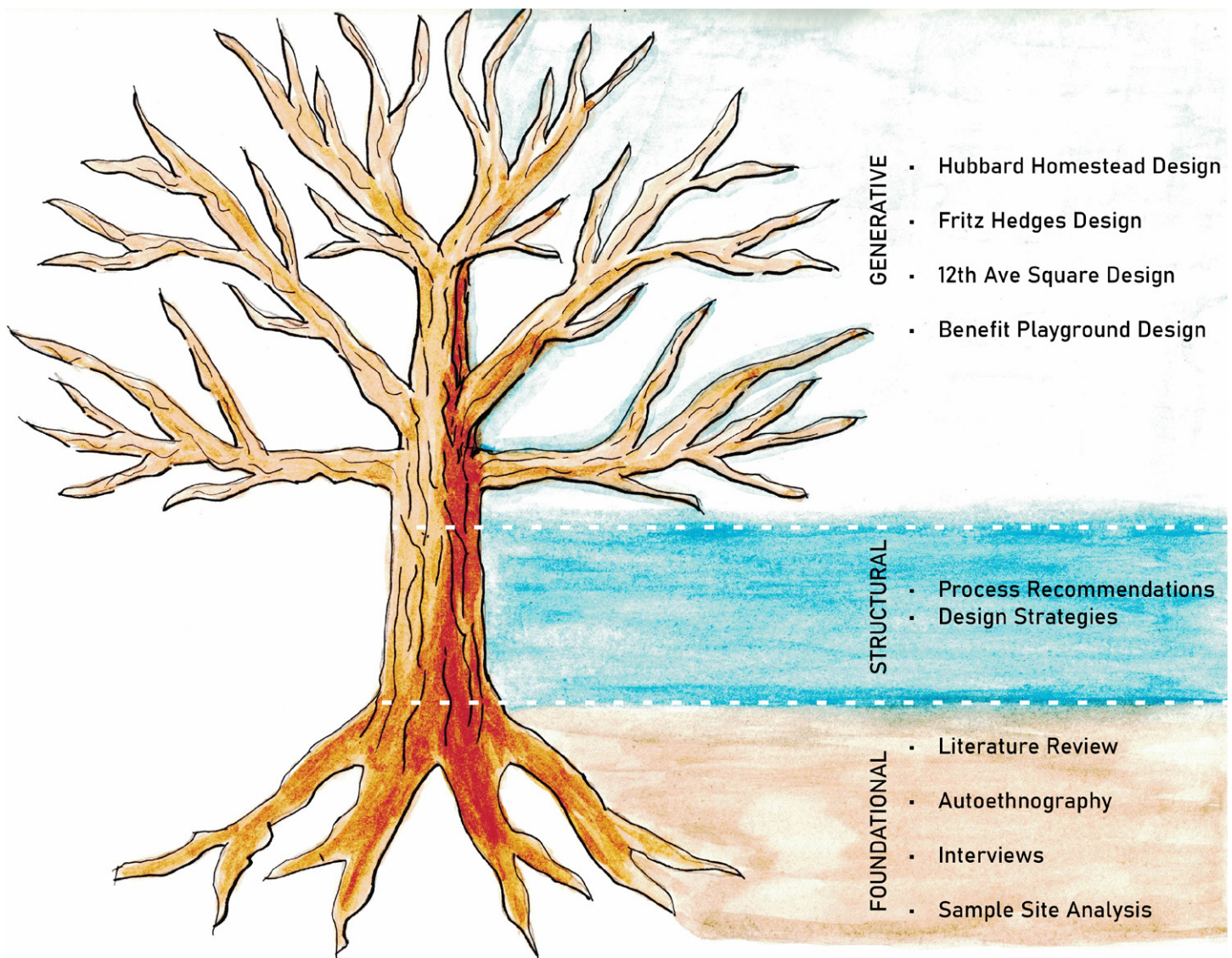


Figure 1.5 This research builds from the foundational to the structural to the generative. Image by author.

are found in small to medium developed parks throughout the city so they could be applied broadly. The design interventions are calibrated to amplify and augment the pre-existing good work of SPR maintenance workers and scaled to fall within current municipal limitations and constraints. Proposed design strategies are intended as examples of applying the Maintenance Design Guiding Principles developed through research findings. They demonstrate design strategies rather than prescribe cut-and-paste elements to be inserted into a park.

Critical Position

Asset-Based Approach

This study adopts an asset-based approach to center the beneficial characteristics of the design of Seattle's parks and SPR's maintenance operations. As Pretorius and Nel (2012) state, assets typically include, "the personal/human, physical, financial, natural, political, social,

spiritual, and cultural assets/capital within a community." (Pretorius and Nel 2012, 10). The assets present in the SPR community include the skills and expertise of maintenance workers; the longitudinal observation of parks enshrined as institutional knowledge; the structural distribution of maintenance infrastructure and staffing throughout the city; the fleet of trucks, tools, and equipment; SPR funding streams; and the networks of collaboration between designers and maintenance workers. This study uses an asset-based approach to embrace the bureaucratic constraints of municipal maintenance so that landscape designs can localize, surface, and celebrate the material and human realities of maintenance.

Asset-based framing, "focuses on valuing and recognizing the strengths of individuals and communities, rather than emphasizing the challenges and disadvantages." (Montañez 2023, 3). The role of individuals within the community is also an important aspect of asset-based framing. "In general, there seems to be a

consensus that asset-based approaches involve the valuing and incorporation of individuals' cultural practices" (Montañez 2023, 3). In the context of this study, the community is the collection of designers and maintenance workers who design and shape Seattle's parks. The focus of this study is on the SPR community and individual maintenance workers who care for Seattle's parks. This framing is rooted in respect and care for the expertise of the maintenance workers who do a great job of tending to Seattle's public parks.

The intent of an asset-based approach broadly applied is to avoid the harm that can come from its opposite: a deficit-based approach. When a community is defined by the things it lacks, several negative outcomes can result. A deficit-based framework creates a binary dynamic of a helpless community that can only be saved by a heroic outside expert. This leads to a belief that interventions and improvements must be generated by an expert outside the community, leading to a dependence on outside expertise (Pretorius and Nel 2012). These pitfalls are avoided with an asset-based approach that seeks to draw from the perspectives of community members to shape recommendations and interventions that stem from an understanding of existing assets. Pretorius and Nel (2012) explain that an asset-based approach, "encourages an appreciation and mobilisation of assets and strengths in communities." (Pretorius and Nel 2012, 10). With this approach, improvements come from enhancing and amplifying existing conditions rather than the injection of a novel outside stimulus.

Including Maintenance Workers

It is imperative that the people doing the physical labor of caring for built landscapes get a say in how those landscapes are designed. For one thing, including maintenance workers leads to a more comprehensive engagement with stakeholders. Engagement with maintenance workers also leads to more successful designs since maintenance workers are deeply knowledgeable about the sites they work in, and they will likely be more invested in a landscape's success if they feel some ownership in its design. Furthermore, maintenance workers already engage in park design through their work. Each day in the city of Seattle, about 1,800 SPR employees keep the city's parks, community centers, and recreation programs going (City of Seattle Open Data 2026). The maintenance workers mow, trim, prune, weed, mulch, plant, dig, build, remove, replace..., and the list goes on. The materials and shapes and forms of designed spaces modulate in response to this maintenance work. This is design.

This research project is rooted in a belief that the design professions do not adequately engage maintenance workers in the design process, and it seeks to identify this gap in collaboration and recommend strategies for robust engagement. As Franco (2023) puts it, "Working-class people directly conduct the work of making and maintaining landscapes... These workers operate at a great social and spatial distance from those that direct, benefit, and profit from their work." (Franco 2023, 585). These distinct and divided roles mean that maintenance workers don't inform designs—they merely inherit them. Engagement with maintenance workers is not just lacking in practice, but also in academic settings. "It has been my experience that in the rare instances when labor is approached in an academic setting, the focus is usually on the process rather than on the people" (Franco 2022, 96). This study aims to involve maintenance workers through the academic research methods, and propose strategies for expanding their inclusion in professional design practice.

Engaging maintenance workers in the design process aligns with the cultural values of the landscape architecture profession. Established and celebrated design processes in landscape architecture are built around community and stakeholder engagement, such as participatory design. These approaches focus on designs informed by the people who will be using the built landscape. Maintenance workers are key stakeholders who are often overlooked even in participatory design. Yet, they are intimately connected to the built landscapes they care for. Their input in a typical design process is perfunctory at best when it could be profound. The landscape architecture profession has come to acknowledge that spatial design should be a collective negotiation between all stakeholders, but physical laborers often remain excluded from the process (Franco 2022). This research project looks at design strategies that foreground the input of physical laborers in the design process.

Including maintenance workers in the design process can take many forms. One helpful framework comes from Daniel Engster (2005) whose "three virtues of caring" include attentiveness, responsiveness, and respect. In the context of this research project attentiveness means paying attention to the role of maintenance workers and highlighting their contributions. Responsiveness involves "a dialog with the subject of care to understand their needs and their response to care" (Franco 2023, 590). In this project, these dialogs take the form of interviews with SPR maintenance workers. The third step of respect means "incorporating the reality

that others are knowledgeable about what they need, and that these needs are important” (Franco 2023, 590). This research project respects maintenance workers by integrating their suggestions into Design Process Recommendations and the development of Maintenance Design Guiding Principles.

Respect can also mean representation, and in landscape design, representation can take many forms. “This social representation may be formed through advocacy, research and documentation, bureaucratic consideration, credited collaboration, informal socializing, and other acts of inclusion.” (Franco 2022, 96). This research project seeks to represent maintenance workers through activities such as research and documentation, bureaucratic consideration, and credited collaboration. Another important form of representation is to include maintenance workers in design visualizations. The standard vignettes and renderings used to communicate a design’s potential rarely include maintenance workers. More often the people that populate these pictures are happy parkgoers. The simple act of adding maintenance workers to these images increases their representation in the design professions.

A further extension of this respect for maintenance workers means designing landscapes that accommodate the needs of maintenance workers. Mattern (2018) speculates about this strategy by saying that, “we could imagine physical infrastructures that support ecologies of care—cities and buildings that provide the appropriate physical settings and resources for street sweepers and sanitation workers, teachers and social workers, therapists and outreach agents.” (Mattern 2018, 12). In terms of public landscapes, this would mean viewing parks as the workplaces of public servants, not just locales exclusively meant for recreation and leisure. Such an approach would foreground the needs of maintenance workers to design landscapes that promote their wellbeing by being ergonomically comfortable to care for and necessitate tasks that are enjoyable and desired. After all, Franco (2023) reminds us that, “in many ways the work itself—tending, weeding, pruning, mowing, being outside, actively *caring* for life—has the potential to be fulfilling to the human spirit (Franco 2023, 591. See also Harrison, 2008; Hondagneu-Sotelo, 2014; Hoyles, 2005).

Embracing Municipal Constraints

Landscape design and maintenance within the public realm includes many constraints. Budgets are constrained, timelines are longer, regulations are legion. Constraints limit any design, but municipal design tends

to be overwhelmingly defined by constraints. Constraints on staffing. Constraints on budget. Constraints relating to public input. Constraints from fears of liability. For a designer these constraints can either be a hindrance, or they can catalyze creativity. A negotiation of constraints can make a designer think more creatively about how to design and build an enjoyable park that responds well to these realities. This study seeks to operate intentionally within constraints to make design proposals more realistic and viable.

Constraints change depending on the size of a project. They tend to reach their apex during the design of a new park, or during large-scale renovations. This study is less interested in this large-scale type of design. Instead, it is focused on small-scale changes in form and material resulting from the everyday maintenance of vegetation. One feature of this small-scale interplay between design and maintenance is that the process is less constrained than high-profile park design. Consider the recent redesign of Victor Steinbrueck Park adjacent to Seattle’s popular downtown tourist destination, the Pike Place Market. This redesign took ten years, included multiple rounds of community engagement and internal review processes (City of Seattle). In contrast, an update to a planting plan for a small shrub bed in a neighborhood park can be carried out in an afternoon by a small crew of gardeners. These smaller interventions can be spontaneous, quick, and agile. They can be reactive, dynamic, creative, and experimental—the exact qualities that will be needed as landscape disturbance and change becomes increasingly unpredictable due to climate change. This is not to say that everyday maintenance of vegetation is not without constraints. The constraints are both trickled down from the larger bureaucratic constraints (budget, staffing, public opinion), and unique to the smaller scale (material availability, tools, transportation challenges, workload). Both types of constraint will need to be considered to generate design ideas that are rooted in reality.

The Role of Aesthetics

This research project looks at methods to foreground maintenance considerations in the design process rather than aesthetic considerations. In the maintenance design paradigm that grounds this research, landscape aesthetics are an essential consideration but should not be the starting point for design. Aesthetics are still important, but maintenance design means that aesthetics are the result of a design process rather than the driver of that process. The driver of the design thinking put forth in this research is the existing maintenance constraints at

SPR. Designs are primarily calibrated to respond to those constraints. This is a shift from a design process which aims to reach a certain aesthetic vision and then uphold that vision through ongoing maintenance. Seattle's Japanese Garden is an example of a design that aspires to the formal, visual standards of a Japanese walking garden first and foremost: maintenance operations such as pruning, weeding, raking, and leaf blowing are selected to uphold that aesthetic.

A landscape's aesthetics are still important to consider because aesthetics are a visible record of maintenance, signaling a landscape's care to the public. This research project aligns with the thinking of Nassauer (1995) who demonstrated that public perception of landscapes is often determined by the "orderly frames" that define planted areas. The approach of this study is to generate forms and aesthetics through a negotiation of maintenance constraints leading to novel and emergent forms (Geffel 2020). In the end, though, these forms and aesthetics need to project intention and care to win public opinion, even if they are novel.

Because this approach logically leads to public landscapes that will look different, there also needs to be a narrative reframing around which new aesthetic compositions are acceptable to the public. One step toward this reframing is to change the criteria we use to evaluate the appearance of public parks (Sutton 2022). Often this reframing is the result of designs that have an ecological component, which tends to be incompatible with traditional maintenance operations (Zhorov 2025). Ecological landscapes are also ones where conditions are dynamic rather than static. Accordingly, the way landscapes are evaluated needs to shift to a flexible model based on performance and growth rather than a static set of criteria. This is a two-way exchange between the public expressing their aesthetic desires and designers and maintainers explaining the rationale behind novel aesthetics such as leaving a grass field unmowed to promote pollinator habitat.

Dynamic Solutions

This study seeks to align with theories that steer away from solutionist thinking toward an embrace of ongoing change in the landscape. This also aligns with the asset-based framework discussed earlier. Because an asset-based approach does not dwell on problems, prescriptive solutions are not the end goal. Problems and solutions are reframed and reprioritized through this approach. As Pretorius and Nel (2012) describe, "the energy is focused on strengths and assets and a positive meaning is then given to 'problems and needs'

as opportunities for development." (11). Problems and solutions still exist in this approach, but the primacy of this binary is deemphasized.

One-size-fits-all solutions imposed externally are incompatible with the dynamic scenarios that present the starting point for maintenance design. As Holmes (2020) notes, "we need designs that not only make space for the landscape to change, but that also actively and intelligently participate in making that change" (12). Maintenance design is the perfect paradigm for realizing this vision because it integrates the constant renegotiation of landscape form that is at the core of landscape maintenance. An embrace of maintenance is an embrace of the inherent evolution of built landscapes in response to growth, wear and tear, climatic disturbances, and changing norms and tastes. Holmes (2020) offers a two-part process for designing in this way, "frame a problem before attempting to solve it, and design with change" (Holmes 2020, 12). This study follows this approach by understanding the areas for development, then framing recommendations as flexible approaches and strategies that leave room for adaptation to shifting conditions.

Seattle Parks Overview

This section focuses on an examination of the broad network of the SPR system to provide context about design/maintenance workflows, the distribution and size of parks, the availability and distribution of resources, and the broad range of stakeholders and agents involved in the design and maintenance of Seattle's public parks. This context is important when designing with a maintenance mindset because successful municipal designs need to be calibrated to this context to be maintainable. Having a holistic sense of Seattle's public park system provides a fundamental grounding that will support the latter steps of this project.

Seattle Parks Similarities and Differences

It is important to acknowledge the municipal characteristics that apply broadly across the city, such as policies and best practices, and the characteristics that are unique to specific locations, such as maintenance jurisdictions and microclimates. In the case of landscape design and maintenance the municipal regulations and constraints apply broadly no matter which neighborhood or district a park lies within. Because of this,

many features of Seattle's public parks are the same. For example, the same type of rainbow sign announces the entrance to each park. The unique characteristics of each site could lead to a different planting plan around each rainbow sign cared for by a different crew.

This citywide uniformity applies to certain maintenance crews as well. Specific work units operate citywide. These include the following work crews: Natural Area Crew, Urban Forestry, Trails Program, Heavy Equipment and Turf, Landscape Crew, and the Jefferson Greenhouse. If a big tree falls anywhere in the city, the Urban Forestry team will respond. If plants are being sourced in-house they will come from the Jefferson Greenhouse. If steps in a trail need fixing, the Trails Program is likely to do the work.

District maintenance crews, on the other hand, are bounded by the maintenance district they operate within. The city of Seattle is divided into 8 distinct maintenance districts (see Figure 1.6). Each has its own crew which cares for the collection of parks within their district on a day-to-day basis. Each district has a unique portfolio of parks to look after, different staff with different skills, different availability of resources, and a different set of park users with a different socioeconomic make-up.

Another salient characteristic that is unique to each individual site is its ecology. The range of macro- and micro-climates of each site forms a patchwork throughout the city that plays out at the scale of maintenance districts and the park scale. The ecology and general conditions across the city could be categorized by latitude, elevation, slope aspect, or density to name a few. The downtown district, for example, has a hotter climate due to the heat island effect resulting from extensive paved areas compared with the primarily residential areas in the northwest district. In the downtown district, park visitation is magnitudes higher than other districts, the percentage of permeable surface pales to others, and the heat island effect raises the temperature. Individual parks also have their own ecological idiosyncrasies. It's an anecdotal fact among gardeners that the Japanese Garden has one of the coldest microclimates in the city, for example. Or consider the inexplicable die-off of 11 acres of sword ferns in South Seattle's Seward Park (Friends of Seward Park). The acknowledgement of these site-specific characteristics necessitates design strategies that can be customized.

A successful study of the interplay between design and maintenance in Seattle's public parks must try to balance the similarities and differences across parks throughout the city. This involves an acknowledgement

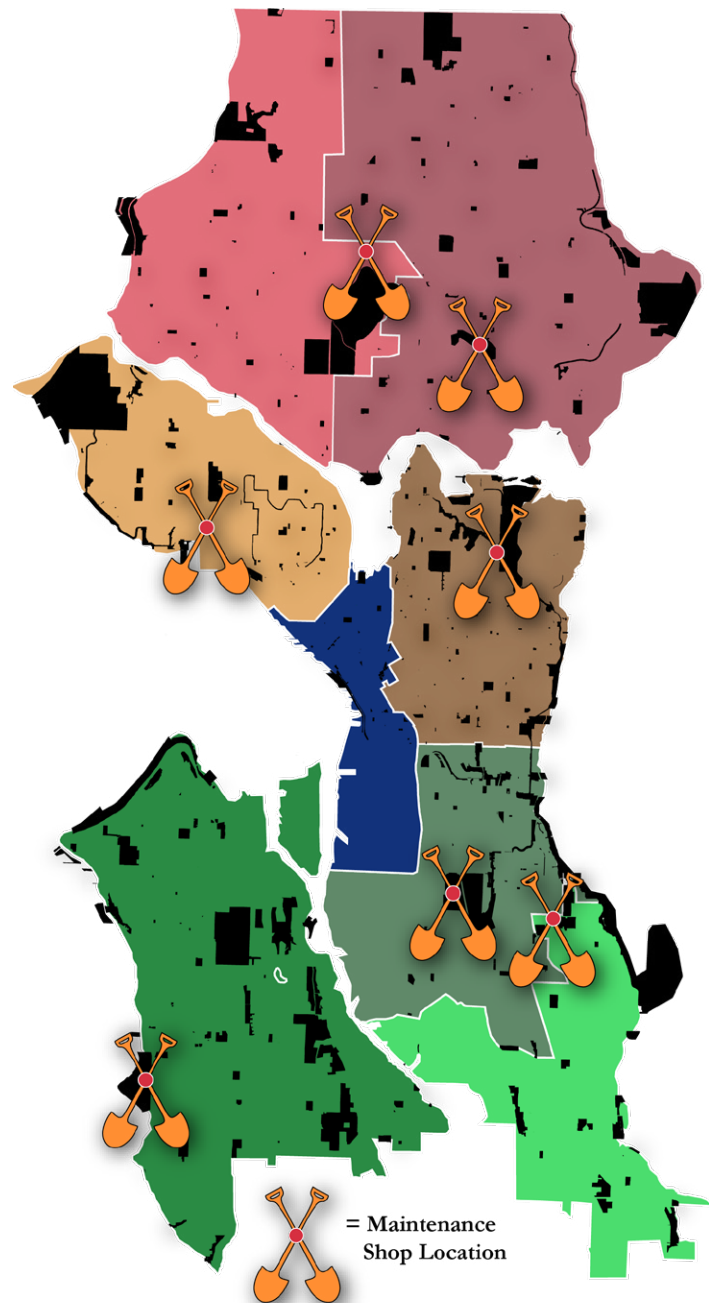


Figure 1.6 Maintenance shop locations (red dots) in the Seattle Parks System and maintenance district boundaries (color coded). Image by author.

of both the homogenous and heterogenous conditions that exist. In developing design/maintenance typologies the idea is to explore strategies that are broad and general enough to apply to common park conditions while allowing room for customization to specific site conditions.

Distribution of Maintenance Infrastructure

The locations of Seattle parks, maintenance facilities, material storage, and equipment form a complex network of sites. Each park is situated in a web of maintenance routes, material flows, truck traffic, and tool transportation.

Maintenance operations are concentrated at maintenance shops which act like logistical hubs due to them having a concentration of maintenance resources (see Figure 1.6). Maintenance workers report to their respective maintenance shop every morning and get dispatched throughout their district or throughout the entire city. Maintenance shops are where tools are gathered, trucks are loaded, and materials are stored and picked up.

SPR maintenance shops are situated within certain parks, making these parks the easiest to access to carry out maintenance operations. If a maintenance worker is at a park close to the shop and they forget a tool, they can run back to the shop with ease. Other parks are far flung at the outer reaches of the city. Some big, high-profile parks have their own satellite maintenance shops just for that park. This is true for Volunteer Park and Golden Gardens, for example. For these parks, a baseline of maintenance infrastructure is on-site, precluding the daily need to transport maintenance personnel and tools across the city. Bulk materials are also cached in various places throughout the city. Sometimes these are the same location as a maintenance shop, in other instances they are separate facilities where arborist chips or stones can be picked up, and large woody material and green waste can be deposited.

This distribution of infrastructure and materials matters when looking at the interplay between design and maintenance because maintenance acts like the metabolism of the park system, generating, processing, and translocating materials and resources. These metabolic components of maintenance require the expenditure of energy scaled to the logistical complexity of the task. Logistics involve drive-time, the amount and type of the different tools required, whether equipment needs to be towed on a trailer, or to be sharpened or serviced beforehand, or whether bulk materials need to be hauled to the work site. Driving and hauling burn gasoline, which contributes to global warming. The raw materials used for maintenance have embodied carbon as well. Energy expenses also add up in the physical bodies of the people doing the maintenance. This human toll is associated with labor hours, which are determined not only by the task itself, but also by the overall logistical complexity associated with it. All of this equates to an overall maintenance cost. The hope for this study is to explore ways that landscape design can be deployed to bring those expenditures—monetary, environmental, and physical—down, or at least shift them, so we are putting our energy in the right places.

Maintenance Expectations

Municipal maintenance operates in the public realm and must respond to public interest. At the very least this means attending to public health and safety. Beyond that, maintenance can respond to regional attitudes of what is desirable and attractive in a park, informed by a sense of place. For example, in Seattle (known as “the Emerald City”) this might mean a penchant for evergreens in the form of towering conifers fringed by salal and snowberry.

In most cases, maintenance expectations are established by the underlying landscape typology, such as turf, shrub beds, or paths. Each of these typologies has a typical aesthetic expectation: for turf, the expectation is that it is free of weeds and mowed to a uniform height of three inches, for example. These expectations are a matter of historical and societal tradition that have become solidified into public opinion (Nassauer 1995). A legible landscape element that is not maintained to an expected standard can be perceived as neglected. For example, a park visitor may read the crisp 90 degree turn in a path and perceive an encroaching shrub as falling out of acceptable bounds. Design communicates intent, and in the traditional paradigm, maintenance upholds that intent.

In the PLP the maintenance standard for common vegetation elements reads, “Flower beds would be full of flowers and free of weeds and invasive plants. Lawns would be edged and mowed, and feel well-kept and usable” (PLP, 92). In general the PLP describes the goal of maintenance as a “‘gold’ service level” to “provide a maximum of psychological and physical comfort.” (PLP, 91). Municipal maintenance is often defined by such standards, as is the case for San Francisco Parks, which uses a set of 295 standards to assess whether or not parks are being maintained well (San Francisco Park Maintenance Scoring Methodology Explainer).

Any study of the interplay between landscape design and maintenance must reckon with these standard metrics for successful maintenance. In some cases, new strategies could be developed to meet these same standards. In other cases, the standards themselves would need to shift to accommodate novel designs, and maintenance strategies that lead to novel aesthetics would need to be evaluated for success using different standards and metrics. Sutton (2022) calls for the latter approach by arguing for “a shift in the way that we maintain landscapes, grade their appearance, and define productivity” (Sutton, 137).

Organization of Labor

Designed and built landscapes would not exist without the people who do the heavy lifting, take on the dirty jobs, and work every day to keep these places existing and usable. As of January 26, 2026, SPR employed 1,815 employees, the most of any city department (City of Seattle Open Data Portal). The people doing maintenance work throughout the city are employed in various positions. The distinction between different roles and responsibilities is negotiated through union representation with most maintenance workers being represented by the Liuna Local 242 Union. District crews maintain facilities and landscapes including cleaning restrooms, emptying garbage, picking up litter, removing graffiti, fixing broken infrastructure, mowing, trimming, mulching, planting, pruning, clearing paths, cleaning up storm damage, power washing hardscape, and so much more. Citywide crews specialize in arboriculture, grounds, trails, ecological restoration, ornamental gardens, horticulture, plant propagation, and heavy equipment operation. Specialty garden crews take care of the city's two Japanese gardens: Kubota Garden and the Seattle Japanese Garden, as well as the Washington Park Arboretum and the Volunteer Park Conservatory.

The maintenance of Seattle parks is also supplemented by a robust community of volunteers, the majority of whom get involved through the Green Seattle Partnership (GSP). Over the 20 years of GSP's existence (between 2005 and 2025) volunteers have contributed a total of 1,438,943 hours to restore Seattle's urban forests (GSP blog, Dec. 3, 2025). In 2025 alone, 2,025 acres across 120 parks were being restored by these volunteers (GSP Annual Report 2025).

This look at labor is important for an inquiry into the design and maintenance of Seattle's parks because any implemented design will be stewarded by the people who care for Seattle's public spaces. Having a working knowledge of the preferences, skills, resources, and interests of the people doing maintenance will go a long way in the future success of a design and help bridge the gap between design and maintenance.

Budget

When it comes to landscape design and maintenance, budget constraints are often cited as a significant barrier to realizing maintenance goals (interview results). SPR is funded through a complex financial apparatus composed of city and county levies, non-profit contributions, and park revenue. For the purposes of this study,

it's important to understand the broad implications that the budget has on design and maintenance.

In general, two things are true of the parks budget: it is never enough, and it is constantly changing. The 2025-2026 Budget Overview notes that "SPR is facing budget constraints in 2025-2026 due to the General Fund revenue forecast being insufficient to cover all Citywide costs." It was a similar, albeit a more extreme story in 2009 following the Great Recession when "budget cuts...led to reductions in staff and services...Parks closed the plant nursery, reduced staffing for grounds maintenance activities, reorganized park maintenance districts, and eliminated one of three tree crews" (PLP, 24).

The ebbs and flows of the election cycle, changing administrations, and shifting priorities also creates a situation where parks funding is unstable. The Great Recession of 2008-9 offers a stark example of this phenomenon, but even during relatively stable economic times, priorities often shift. One implication of this for maintenance is the imbalance between acquisitions and ongoing maintenance. For example, between 2000 and 2014 SPR added 261 acres of land, 48 parks, and 3 community centers to their inventory. This happened in tandem with the budget cuts described above. This meant more parks to maintain and less money to maintain them.

The general structure of the budget also reflects this disparity between the growth of parks and capacity for maintenance, with funds being divided between "operational costs" and "capital costs." The proposed budget for 2026 does not explicitly focus on an increased priority for vegetation maintenance. The maintenance activities that are ear-marked include \$520,000 for restroom maintenance and \$1.3 million for graffiti prevention and abatement. And capital projects carry an even bigger price tag, for example \$2.7 million for planning and design of the Green Lake Community Center and a renovation of Evans Pool (SPR 2026 Proposed Budget).

This study must reckon with budget constraints by looking at maintenance design strategies that are generally low cost and responsive to shifting budgets and priorities. This does not mean automatically going for the "easy-to-maintain" strategies, which usually end up lowering biodiversity. A key goal is to find ways to do more with less and create spaces that don't require intensive and frequent maintenance, but still align with the values of good public design. Woodward (2008) looks at this issue in, "Envisioning Resilience in Volatile

Los Angeles Landscapes” and ties resilience to municipal budgets. Her framing of the way landscapes are “released” from maintenance is helpful here. She argues that “Reasons for this release are varied and range from equipment malfunctions and budget cuts to large-scale events such as disinvestment” (Woodward 2008, 97). An acknowledgment of the instability of budgets necessitates designs that can respond well to being “released” from maintenance due to budget constraints.

Climate Change

Climate change will continue to disrupt Seattle’s parks and have a major impact on landscape maintenance. Summers will be hotter and drier. Winters will be colder and wetter. Annual precipitation will remain relatively stable, but it will be concentrated into larger storm events (CRS). As a result, Seattle parks will be subject to a cycle of drought in the summer months and strong storms in the winter. The City of Seattle has acknowledged the current and future impacts of climate change and has begun planning for these changes by joining the Carbon Neutral Cities Alliance and releasing the Seattle Climate Strategy in 2018. SPR is also involved in this planning, particularly with its Climate Resiliency Strategy (CRS). This planning document outlines the ways parks will be affected by climate change, and the steps that should be taken to adapt to a changing world. This study focuses on developing design recommendations and strategies that reduce the energy expenditures associated with maintenance thereby reducing greenhouse gas emissions. In addition, recommendations and strategies are designed to be flexible and better adapt to a changing climate.

The main implications of climate change for vegetation maintenance and management revolve around responding to temperature changes, precipitation, and storms. These shifts are already being felt and will only get more pronounced. This extreme swing in conditions is likely to disrupt planted areas and lead to more die-off and storm damage (CRS). Maintenance workers will be on the front lines responding to these changes. Landscape design will need to take these disturbances into account, by imagining novel designs that are resilient and flexible.

In the CRS, climate change impacts are ranked based on a park element’s vulnerability measured by its exposure to risk, sensitivity, and capacity to adapt. The most relevant impacts for the purposes of this thesis are related to plants and infrastructure. Of the 24 categories associated with “plants and animals” the vast majority are predicted to have some degree of vulnerability to climate change. For example, trees are predicted to see an

“increased rate of tree failure to drought stress, increased saturation, high winds, and disease/insects.” And the impact of climate change on financial cost, health and safety, and natural resources are all rated as “high” (CRS, 12). Other impacts include loss of vegetation, loss of wildlife habitat, loss of pollinator habitat; an increased demand for water due to drought and heat; and an increase in erosion of soft-surface trails, and landslides.

Disruptions caused by climate change have the potential to provide the kind of constraints, challenges, and dynamic change-over-time that landscape architecture design thrives on. These disruptive emergent conditions may be proverbial “lemons,” but innovative landscape design done in tandem with maintenance activities could turn them into lemonade. Maintenance operations will need to be reactive and agile, and designs need to lay the groundwork to allow for that agility. Prescriptive designs of rigid spaces will have no place in this future. The role of the designer may need to become one of choreographer, imagining and teaching new moves to respond to an incessant beat of change and uncertainty that is only getting louder and more persistent.

One important component of this is to reduce the greenhouse gas emissions resulting from landscape maintenance. Many common landscape maintenance activities involve motorized machinery. To date this machinery has primarily been powered by gasoline. A big reason for this is the underlying design of parks. Traditional turf lawns require mowing to exist, and it’s unlikely the Parks Department will trade in its gas lawn mowers for scythes or sheep. Even as SPR makes plans to switch to electric power and solar power, it is worthwhile to consider landscape typologies and maintenance activities that don’t rely on the energy grid, which is not as green as we would like it to be.

Historic Preservation

In many ways historic preservation is a specific type of landscape maintenance. It shares many similarities with traditional maintenance, namely the mandate to keep things as they are. In the framework of historic preservation this mandate is focused around a particular historic period, the “period of significance.” The period of significance is the historical era when the landscape in question overlapped with an important historical moment. For Seattle’s Olmsted Parks, for example, their period of significance is when they were designed and built because of their connection to an important design movement, in this case the work of the firm of Frederick Law Olmsted. The determination of historic significance

means a landscape must continue to be maintained to align with the historical design intent.

Historic preservation has many things going for it. Historic landscapes offer educational opportunities, make landscape memory explicit, and can be low maintenance. The strike against historic preservation, especially in the face of climate change and other social and ecological changes, is that an insistence on upholding the original design intent can ignore knowledge and best practices tailored to contemporary times, such as urban ecological design theory. As easily as historic preservation can be seen as a low maintenance strategy, it can also be high maintenance depending on the historic aesthetic being maintained. On the one hand, preserved places are off-limits to costly and carbon-intense new construction or wholesale renovations. On the other hand, their preserved state may preclude a shift to a more ecologically or socially beneficial landscape. Robert Cook (1996) asked a pertinent question in the title for his paper, “Is Landscape Preservation an Oxymoron?”

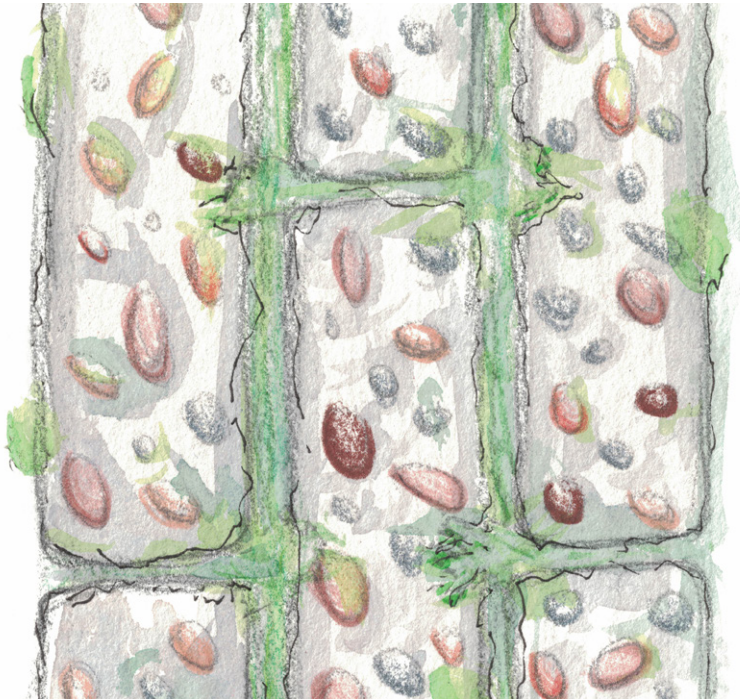
In Seattle’s public parks, historic preservation is primarily focused on the Olmsted parks. According to the Friends of Seattle’s Olmsted Parks, the Seattle Park system contains 37 Olmsted-designed parks and playgrounds, not counting an extensive network of boulevards throughout the city. This historic legacy lays the foundation for a consistent aesthetic and design language that shows up throughout the city and establishes an expectation that design and maintenance must often engage with.

A more casual and intangible form of historic preservation exists on public land, one that is based on people’s attachments to local places they care about. Place attachment theory explores the bonds that people have toward places in their lives, including communally shared spaces like local parks. These attachments have important implications for a community’s participation in the design and planning process (Manzo & Perkins 2006). Even if a park was not designed by a famous design firm or otherwise has a significant tie to a historic person or event, people tend to find comfort in familiar surroundings. When considering a new maintenance/design paradigm, the logical conclusion is a new aesthetic. Changing the design and maintenance of public lands will inherently involve winning over public opinion.

This inquiry into the interplay between design and maintenance strives to offer a spectrum of design and maintenance strategies, some more apparent and non-traditional than others. Strategically, the development of design typologies are intended to be small-scale

and achievable with a light hand. Small changes are easier to achieve and able to sway public opinion gradually. But that doesn’t mean they can’t have a big impact. It’s in their scalability and frequency that major positive impacts can accumulate across the city. Their smallness and modesty also play well with notions of historic landscape preservation.

Chapter 2: Literature Review



“If we wish to better support the critical work performed by the world’s maintainers, we must recognize that maintenance encompasses a world of standards, tools, practices, and wisdom. Sometimes it deploys machine learning: other times, a mop.” (Mattern, 2018, 23)

Defining Maintenance

One prominent school of thinking posits maintenance as “care”, that is, the concept of maintenance based on theories of care rooted in feminist ethics (Jacob and Wiens 2024). In this mode of thinking, care was theorized partly as it related to the domestic roles of women within patriarchal systems. Care and labor went together in a specific way where fundamental and important tasks such as childcare, caring for the home, caring for the elderly were gendered and underappreciated. The inextricable link between care and labor is especially pertinent. As Jacobs and Wiens (2024) point out, these two concepts exist in society in very different spheres. Care is seen as virtuous, whereas labor is invisible. In charting the eventual adoption of care theory in environmental thinking, Jacobs and Wiens (2024) draw out some common themes. They argue that care can be applied to “specific acts of maintenance...ecological stewardship and conservation...urbanization and social justice...” among other place-based efforts (Jacobs and Wiens 2024, 431). This is a helpful framing for the way that care shows up in the profession of landscape architecture. In a series of case studies Jacobs and Wiens specify new ways of extending care that challenge conventional notions. These new ways of caring are communal and focused on relationships. Another way of framing care is to contrast it to a solution-driven mindset, as Jacobs and Wiens (2024) say, “distinguishing ‘care’ from ‘cure’” (434). Here, traditional attitudes toward maintenance as solutions are criticized because they lead to damaging practices based on control and rigidity. A more fluid approach based on relationality is offered as an alternative. This is a useful way to approach parks maintenance.

Maintenance can also be seen as repair located at the breaking point (Mattern, 2018). In studying rust, dust, cracks, and corruption, and the hopeful acts of engaging with the broken things of the world, Mattern then upholds the value, indeed the necessity, of repair, and mending and fixing. In doing so, she offers maintenance as a theoretical framework in its own right. Mattern’s expansive theorizing situates maintenance as a vitally human endeavor that takes on many forms and leads to many possibilities. Mattern reminds us that thinking of maintenance on its own terms highlights the material negotiation it entails. For landscape architecture, a maintenance theory highlights the physical worlds of objects. As Mattern says, “this is an exciting area of inquiry precisely because the lines between scholarship and practice are blurred” (Mattern 2018, para. 3).

For other authors, landscape maintenance is simply the primary way that humans interact with plants. Michael Geffel (2021) and Julian Raxworthy (2018) chart the way everyday maintenance shows up in the landscape lexicon and how this traditional framing should evolve. Geffel notes that the textbook concept of maintenance as “the mechanistic repetition of the same operation over and over to suppress change in the landscape” (3) is something that we need to do away with. He goes on to say that many landscape architects prefer the term, “management” and adjacent fields like restoration ecology prefer “adaptive management.” In all of these variations, the subtext is the same—that plants are at the receiving end of the action of maintaining and managing. This is especially true in municipal landscapes. As Geffel (2021) calls out, “every year public works departments pursue ‘vegetation control’ to show that they have not neglected their city” (4). In setting up his argument for a new maintenance vision he melds maintenance and care, stating, “if landscape architects acknowledge that the essence of maintenance is care, landscape maintenance becomes increasingly specific, adaptive, and inventive. (Geffel 2021, 4) Here, care and maintenance blend in a way where the physical and material realities of maintenance coexist with the heartfelt, human notions of care.

Julian Raxworthy (2018) makes a similar argument that the ongoing attention paid to landscapes ought to be centered around plant growth. Raxworthy’s version of ongoing human-land interaction is called gardening. Like Geffel, Raxworthy is interested in the dynamism of landscapes, rather than artificially creating stasis. He locates this dynamism in plant growth and what he calls “the viridic.” This force of growth within the landscape, he argues, should be the nexus of design decisions, and like gardening, those decisions should be reactionary, recursive and ongoing. Like Geffel, Raxworthy is also interested in the repetitive nature of maintenance which is a critical component of this thesis.

Perhaps the best synthesis of all the maintenance theories is found in the work of Mierle Laderman Ukeles, a maintenance artist. Her work touches on gendered notions of care, environmental framings of care, municipal and material realities, repair, and repetition. In response to the question, “What is maintenance?” Ukeles offered the answer, “maintenance is a drag...” in “Manifesto! Maintenance Art ‘Care’” (Ukeles 1969). In this manifesto, which is a proposal for a sort of performance art, Ukeles lays out the societal position of maintenance as the jobs we dread—the leftover work after the important work is done, or as she puts it, “the sourball

of every revolution: after the revolution, who's going to pick up the garbage on Monday morning?" (Ukeles 1969, 1). It engages with the gendered component of maintenance (the manifesto came about after she had her first child and was juggling being an artist and a mother) as well as the environmental component of maintenance. The manifesto describes the delivery of contaminated bits of earth in the form of refuse, polluted air, polluted river water, being brought to the museum and placed in "a container of ravaged land." In her subsequent work, notably *Seven Work Ballets* she choreographed public works operations as performances (Ukeles, 2015). This notion of maintenance as performance and choreography is especially resonant when looking at the work of municipal maintenance where an entire workforce is maintaining a city on a daily basis.

These various definitions of maintenance described in this section are helpful in highlighting the different ways of framing the ongoing human interaction with a landscape. This work encompasses two main types of maintenance: ongoing maintenance and reactive maintenance. In a framework of ongoing maintenance, activities are routine, predictable, and preventative. These are activities that "come with the territory," like the need to regularly mow turf or weed a shrub bed. Reactive maintenance entails the unexpected reversal of a major disturbance such as a tree falling and crushing a boardwalk. In a traditional maintenance paradigm, steps are taken to return a landscape to an ideal condition when such a disturbance occurs but with these expanded conceptualizations of maintenance we see new possibilities for the dynamic, responsive and ongoing work on park maintenance and care.

Maintenance Workers

Another important area of study focuses on acknowledging the human labor required to maintain landscapes. For example Ukeles' (1969) work highlights the people who do the work by starting with the observation that the workers don't get enough credit and attention. Franco (2024) similarly examines the marginalization and exploitation of landscape maintenance workers. Whereas earlier theories of the connection between care and labor centered around the gendered context of maintenance labor, Franco is interested in the racial and the political. She lays out a similar origin story for care theory starting with feminist theory, but then shifts to its environmental application. She is critical of care's application toward the environment in focusing more

on ecological notions than the people who do the work. In the United States landscape labor is primarily carried out by people from Mexico and Central America who often work under the predatory H-2 visa system. Of this program she says, "Exploitation and abuse are rampant. Government officials have described the H-2 program as 'close to slavery.'" (Franco 2024, 588).¹ In Franco's examination, much of this labor and exploitation is concentrated in private maintenance companies, but she importantly reminds us that the landscape architecture profession is not absolved of responsibility:

"The work that these, primarily Mexican, guestworkers engage in runs the gamut of landscape production, from the horticultural to the ecological. Landscape architecture and design, is not excluded from this domain... This is physical labour that supports landscape spatial production at all scales, at its very foundations. Without it, human-designed landscape change would be untenable." (Franco 2024, 589).

In her conclusion, Franco proposes a way forward that could start with Daniel Engster's three virtues of caring, the first of which is "attentiveness." (Franco 2024, 590).

In "Invisible Labor: Precarity, Ethnic Division, and Transformative Representation in Landscape Architecture Work" Franco (2022) discusses the ways landscape architecture has not been attentive to the workers who tend to their designed environments. She locates the problem as a lack of representation and notes that this is particularly disappointing since representation is the main responsibility of landscape architects. Our discipline is rooted in drawing, representing, and visually communicating landscapes, yet these depictions rarely include people working. Parker Sutton (2022) offers an example that provides greater visibility of labor in public spaces. At the outset of the COVID-19 pandemic, funding for public landscape maintenance was drastically cut, and social distancing measures made it difficult to carry out routine maintenance. Sutton describes the example of New York's parks where grass grew long and plants grew without control. This brief period, which he called the "anthropause," showed the inverse connection in the public imagination between the invisibility of workers

¹ In just the two years since Franco's work was published, the treatment of immigrant workers has only worsened as the U.S. Immigration and Customs Enforcement (ICE) agency's tactics become more and more aggressive toward immigrants.

and the visibility of their work (Sutton 2022). Public landscapes are on display for all to see, yet the humans who use their bodies to uphold the existence of these places are out of sight and out of mind.

It is important to consider how the landscape architecture profession has become disconnected from the human labor on which designed landscapes depend. Landscape architects do not maintain the landscapes they design. In the modern professional paradigm designers design and laborers labor. Raxworthy (2018) charts the evolution of landscape architecture as a profession to explain the historical roots of this division between design and labor. From the start, landscape architecture existed in tension between the practical aspects of gardening and the artistic aspects of design. The establishment of the ASLA in 1899 included both Landscape Gardeners and Landscape Architects. In this initial formulation, labor and design were closely related. It wasn't long before this changed as "the profession quickly distanced itself from the garden workers on the basis of class" (Raxworthy 2018, 21). The forces of professionalization drove a wedge between the hands-on aspects of landscape production and the hands-off aspects. Landscape architecture came to be seen as prestigious, academic, and artistic whereas gardening was regarded as unskilled work. This set up the current dynamic where designers instruct and workers carry out those instructions. Raxworthy proposes a solution to this division where landscape architects center their work around plant growth, or the "viridic" (i.e. literally having the color or quality of green) so that, "landscape architecture renewed by gardening will operate in completely new ways that blur the class divide between the professions and the trades." (Raxworthy 2018, 6).

Landscape Architecture's Relationship to Maintenance

Calls to integrate maintenance thinking into landscape design are becoming louder in the literature, but the relationship between these two disciplines must be negotiated thoughtfully in order to respect the domain of maintenance workers. There is a risk in arguing for comprehensive integration of design and maintenance as it puts the solution in the hands of landscape architects, to say, "I can do it all." If that were true, gardeners and maintenance workers, whose livelihoods are built upon

the current division of labor, would no longer have jobs. There has to be a way to respect and uphold the domain of each workforce while building in more integration. The first step to this integration is to increase an awareness of landscape maintenance considerations among landscape architects. A good place to start would be to make landscape maintenance education a required part of the curriculum of accredited landscape architecture programs.

For Franco (2022), a good way for landscape architects to engage with maintenance without overstepping the expertise of maintenance workers is to increase the representation of maintenance workers in design drawings. She advocates for this not just as a matter of representation, but because that representation reminds us of the critical role of maintenance and maintenance workers in the life of a designed site. If we want to help blur the lines between landscape architecture and landscape maintenance, we can start including the acts of maintenance and the people who do the work but that is just the beginning of a larger shift (Franco 2022). This approach respects the unique skills of each group while bringing attention to the unsung aspects of maintenance work. If we are trying to communicate the unique human aspects of maintenance and shed light on the people who do the work, we need to think of ways to achieve that through the visual language of design drawings but without tokenization, exoticization and fetishization, all of which would do more harm than good. Projecting an image of a maintenance worker in the posh conference room of a high-end design firm will not bring about mutual respect. To carry out Franco's vision, visual representation of labor will need to be thoughtful and consensual.

Another aspect of depicting maintenance could be in the way Sutton (2022) calls for a "shift in the way that we maintain landscapes, grade their appearance, and define productivity." (137). Landscape architects imagine and communicate novel places and spaces through drawings. One type of maintenance-centered drawing could be what Sutton calls a "calendar of care" which can, "illustrate the carefully managed evolution of a landscape across seasons and years." (Sutton 2022, 142). In Sutton's formulation, that work of communicating novel spaces could be applied to maintenance by showing, highlighting, celebrating and enhancing aspects of landscapes that are derived from better forms of maintenance. Our drawings could show weeds as beautiful. They could depict the environmentally damaging ramifications of gasoline powered machinery like lawn mowers, weed whackers, and leaf blowers. They could show that

ecological plantings, traditionally seen as unkempt, are, in fact, rich with life. Sutton's logic says that landscape architects set standards. In some cases polished and pristine professional design drawings wrongfully promise a fantasy. In reality, landscapes will never look like the picture, so why not change the picture to highlight the existing aesthetic realities.

Commonly held assumptions and attitudes in landscape architecture are an impediment to realizing this new relationship to maintenance. Some recommendations noted in the literature are that firms either do the first few years of maintenance themselves, consult with specialized maintenance crews, or develop detailed management plans. These may be practical considerations, but they expose the underlying assumption that maintenance workers are unskilled and landscape architects need to take matters into their own hands. Attempts to integrate landscape design and landscape maintenance should focus on increased collaboration built on mutual respect. This will mean acknowledging the value in different types of knowledge, learning from one another, and compromising when conflicts arise.

Maintenance Design

Whereas Franco and Sutton emphasize new modes of representation, others explore the possibilities of infusing the landscape design process with a thoughtful consideration of maintenance operations. In Geffel's model, the designer sets up a baseline condition which a maintenance worker alters through the spontaneous and reactive deployment of tools in response to direct observation. In this model, design and maintenance are the same. "Maintenance design emphasizes an 'aesthetics of thrift' (Dee, 2010, 22) governed by the parameters of maintenance tools and techniques, and a flexible, incremental adaptation of the landscape through direct action." (Geffel 2020, 4). This logic is applied to lawn mowing by testing different mowing patterns derived from the width a riding lawn mower cuts in one pass, and the turning radius of the machine (see Figure 2.1). In one scenario, a field is mowed with every other row left unmowed, then the mower operator drives down the mowed rows, looking at the unmowed portions to spot Himalayan blackberry, an invasive weed. When this target species is spotted the mower operator steers over to mow it down, popping out the other side into an unmowed row and resuming their course down this row until more blackberry is spotted. The final pattern of mowed and unmowed field results from the combination

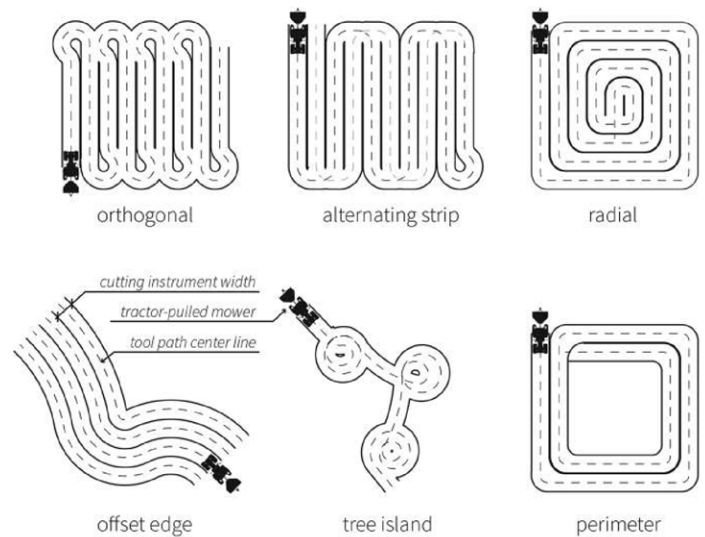


Figure 2.1 Michael Geffel derives novel designs from the parameters of a lawn mower. Source: Geffel 2020.

of a prescriptive design, the spontaneous actions of the maintenance worker, and the shared goal of invasive weed management. The final design has a novel but intentional aesthetic that calls attention to itself as a space that has received maintenance attention.

The inextricable link between maintenance and aesthetics is another intersection where landscape architects can direct their design skills and attention. The go-to formulation is that maintenance is in service of a desired aesthetic, but the opposite can also be true. The way things are cared for informs how they look. This reworking of maintenance logic is especially enticing to landscape architects who see design as their domain. Geffel's (2020) example provides an exciting way of intertwining maintenance and aesthetics to develop both side by side. Nassauer (1995) and Zhorov (2025) have also grappled with the link between maintenance and aesthetics, especially as designed landscapes become ecological landscapes. As landscapes become more complex spatially, botanically, and materially, so too does their maintenance. When such designs run up against budgetary restraints and understaffed maintenance departments, the knee-jerk reaction is to aim for landscapes that are "easy to maintain," which often means a preference for turf, a monolithic expanses of vegetation that can be groomed in one pass by a gas-powered machine. Nassauer's solution is put forth in a paper whose title says it all, "Messy Ecosystems, Orderly Frames" (Nassauer 1995). Here the tactic is to present complex landscapes in the guise of simple ones, to smuggle complexity within simple and recognizable containers. This strategy of making novel landscapes look like familiar ones is a useful concept, especially when working with public landscapes.

And it is a sentiment echoed by Zhorov in a piece with an equally explanatory title, “As Sustainable Landscapes Become the Norm, Maintenance Isn’t Keeping Up.” (Zhorov 2025).

These maintenance design theories support the idea that landscape designs should be more fluid to respond to the renegotiation of space inherent in maintenance operations. Design should be process-oriented rather than prescriptive. Spaces should be elastic, flexible, and adaptive. Woodward (2008) contributes a useful framework for designing with this mindset that includes an emphasis on balancing persistent elements with flexible elements. Persistent features are design elements that tend to be structural and long-lasting such as well-established trees, stones, or topographical features such as swales. These persistent features are important in Woodward’s (2008) framing because landscapes will inevitably be “released” from maintenance (97). Regular maintenance can be interrupted for any number of reasons including budget cuts or natural disasters. Persistent features act as aesthetic anchors during these periods of release by upholding the formal intent of the design even as other elements like vegetation may fluctuate. Persistent features are similar to Nassauer’s (1995) “orderly frames,” but are less about delineating zones and more about distributing legible design moments throughout a landscape. For both authors the rationale for their design strategies is to signal design intent even when other aspects of the landscape may be unruly.

Advancing a Maintenance Design Practice

The literature demonstrates an emerging and exciting emphasis on maintenance within landscape architecture. Today many designers and researchers are grappling with the link between designed landscapes and their maintenance. There is a considerable amount of clarity and consensus around the current status of landscape architecture and maintenance. It is understood that the division between the two disciplines exists because of a class divide between green collar workers and white collar designers that has its roots in the professionalization of landscape architecture. Maintenance workers are largely invisible in the profession of landscape architecture, and the first step in rectifying that is to make labor visible. Design aesthetics and maintenance are intertwined, and this intersection can and should be a generative site for design. If we design with maintenance in mind, and if

maintenance practices shift, then designed landscapes will have a new aesthetic, which will need to be communicated to the public as a good thing.

While Franco (2023,2024), Sutton (2022), and Geffel (2020), among others, present rich examples of representing maintenance, this line of inquiry needs to be expanded to include other mediums and maintenance activities. With calls for designs and maintenance to become emergent, adaptive, and fluid, it remains unknown how landscape architects can apply their skills of graphic representation to such difficult and multifaceted concepts. It will be necessary to find new representation techniques for the daily reevaluation of space at the hands of a gardener. Importantly, any representation of maintenance workers must be respectful and avoid tokenization.

Most of the literature focuses on theories of maintenance or experimental design strategies. As I am looking at the maintenance of the Seattle park system, there is a gap in literature specifically devoted to the municipal aspects of this work. Ukeles comes the closest with her emphasis on public works, and Geffel’s approach is rooted in a ubiquitous public maintenance practice, but more needs to be explored about the bureaucratic and political framing that underpins municipal maintenance in particular.

Another area that deserves more attention is additional maintenance activities beyond mowing. Raxworthy (2018) and Nassauer (1995) are helpful in looking at a variety of landscape types including ecological restoration sites and gardens, but most authors, including them, tend to return to turf and mowing as their main example of maintenance. This makes sense since it is a widespread practice associated with a landscape type that is seen as ecologically deficient. Turf and mowing provide the perfect rhetorical foil, but other maintenance activities should receive a similar amount of attention. What would it look like to apply Geffel’s (2020) model of maintenance design to a shrub bed? Designs should also tap into the potential that exists in the parameters of non-motorized tools like a shovel or pruning shears. For example, one thought experiment could be imagining the implications of mowing turf with a scythe, a useful hypothetical because its parameters are derived from the human body. Its swing is powered by the twist of the torso, and the swath it cuts mirrors the embodied labor of the user (Ussery 2010). This approach relocates the agency of maintenance parameters from motorized equipment to the human laborer.

Overall, advancing a maintenance design theory will involve the combination of different approaches as identified in this literature review. This will be especially fruitful when considering formal design strategies that layer on different approaches to achieve novel aesthetics. One example of this could be combining parametric design (Geffel 2020) with an emphasis on legible edges (Nassauer 1995), layering two distinct formal approaches to delineate maintenance space. The combining of different strategies takes on another dimension when considering Sutton's (2022) call to change the way we grade the appearance of landscapes. This redefined acceptability could be the starting place from which other formal design strategies spring forth. For example, a novel aesthetic could be established as the goal, clear borders of maintenance space could then be established, and parametric design strategies could finally be applied to the appropriate areas. Advancing a maintenance design theory will involve the combination of many theoretical approaches.

Chapter 3: Research Methods



“Now breakdown is our epistemic and experiential reality. What we really need to study is how the world gets put back together.” (Mattern, 2018, 1)

Three different methods were used to answer the research questions for this project: autoethnography, interviews, and sample site observations. These three methods align with the critical position for this project to uphold the values of a maintenance informed design approach. The methods are also rooted in the experience and expertise of maintenance workers and the observable conditions of a sample of Seattle's public parks. The three methods also provide a triangulated approach where findings from one method inform and supplement those from the other methods. In combination, these three methods enabled me to understand the current relationship between landscape design and landscape maintenance at SPR and identify opportunities for developing designs that actively engage maintenance considerations in the design process.

Autoethnography

Autoethnography is a research method that centers around autobiographical writing of a researcher's past experience (see Figure 3.1). It is premised on a rigorous

and intentional examination of the researcher's past experience as it relates to the research topic, acknowledging the fallacy of objectivity and situating the research firmly in a constructivist paradigm. The self-reflective process can take many forms, but it typically takes the form of writing. Markey (2025) identifies a spectrum of autoethnographical approaches from analytical (enhancing external knowledge) on one end to evocative (artistic and expressionistic) on the other. The autoethnography completed as part of this study is more analytical than evocative.

I chose autoethnography as a method because I have previous experience working as a maintenance worker for SPR. I was a gardener on the SPR landscape crew for eight months right before starting the MLA program at UW. The landscape crew focuses on designed landscape renovations and operates citywide. Living through the professional transition from maintenance worker to landscape design student highlighted the gap between these two ways of working with landscapes and inspired the selection of this research topic. By revisiting

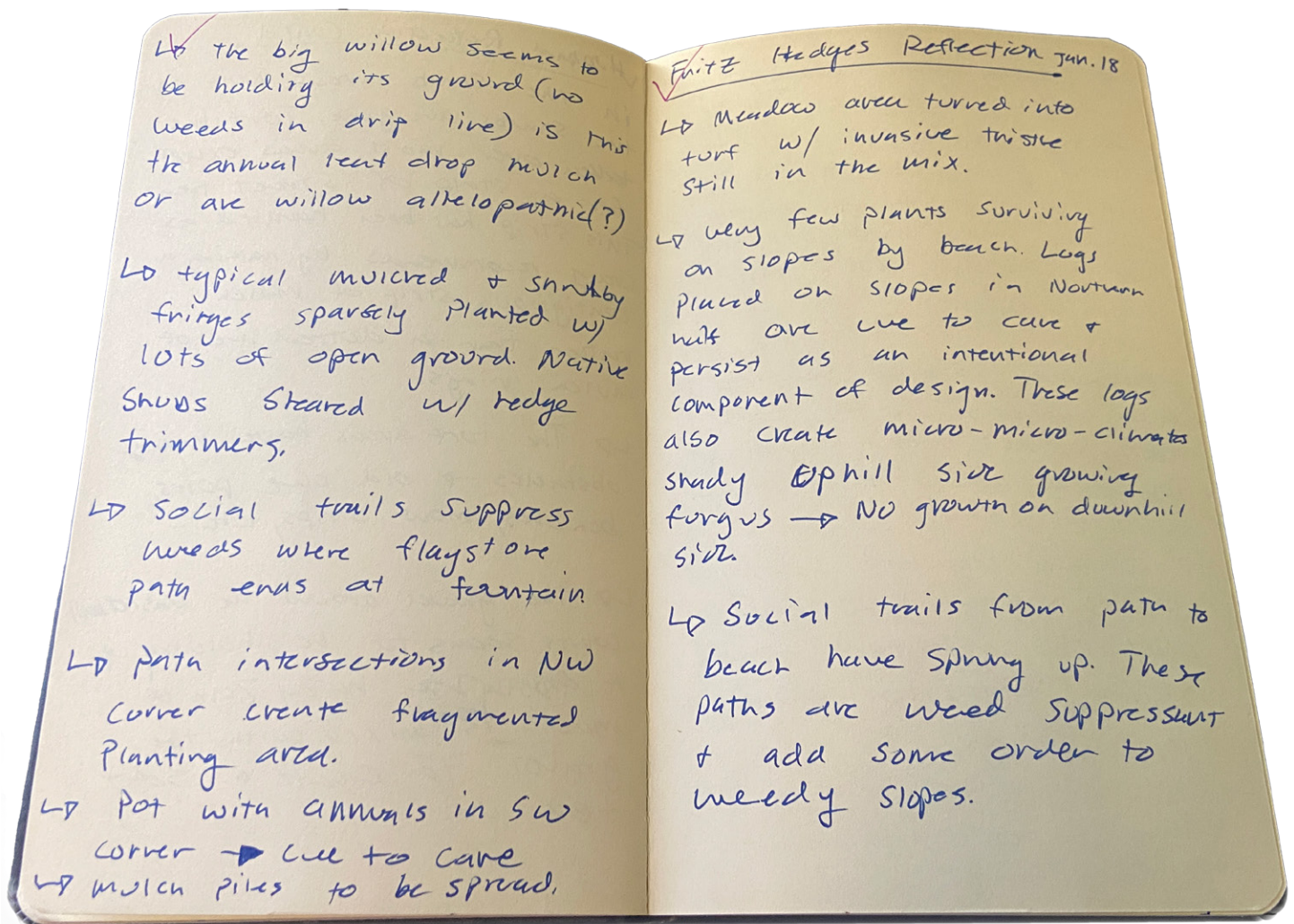


Figure 3.1 A journal entry completed as part of the autoethnographical research. Image by author.

my experiences maintaining Seattle parks I was able to identify common maintenance tasks, typical landscape typologies, and aesthetic expectations and goals for vegetation maintenance at SPR. These reflections also contain a longitudinal aspect as my autoethnographic writings encompass work done over the course of eight months including repeated visits to parks during that period. This timeframe provides change-over-time observations. It also provides cause-and-effect observations in terms of seeing the impact of maintenance operations and the evolution of landscapes after the work is done.

For the autoethnography, I visited four parks where I had previously worked as a gardener for SPR (these are the same four parks that were used for sample site analysis). After walking each site to activate place-based memories, I did free-writing to record my memories of engaging with the site as an SPR maintenance worker, and compared those past observations with current observations. These reflections identified specific locations in the park where maintenance took place and the reasons for the maintenance. Journal entries also include reflections about the discussions and opinions of other maintenance workers surrounding maintenance tasks and projects. In some instances the journal reflections also collect interactions with park visitors including their comments or opinions about the park's maintenance and condition. The written reflections are focused on maintenance activities through the perspective of a maintenance worker as a way to ground this research in the day-to-day reality of caring for Seattle's public parks.

Integrating Autoethnography into Interview Method

Markey (2025) outlines a combined research method where autoethnography is intentionally integrated into the interview process. This strategy allows for the integration of two distinct methods, which increases rigor and the validity of results. This integration, "allows researchers to produce deep, 'thick' analyses of the data" (Markey 2025, 4). When it comes to conducting interviews, autoethnography lays the foundation for common-ground between the interviewer and interviewee. Markey (2025) says "a common challenge faced by qualitative researchers engaged in participatory research is the position they occupy in the 'space between' the insider and outsider perspectives in relation to both the research and the research participants (Markey 2025, 1)." In the spirit of this study, which foregrounds the gap between landscape designers and landscape maintenance workers, spanning this, "space between" is paramount.

For these interviews, I adopted Markey's method which involves identifying moments where the interview participant and the interviewer's experiences were similar. In those moments, the interviewer is encouraged to share their experience. Markey notes that this approach, "allowed for compassion, collaboration, and the natural evolution of our conversations" (Markey 2025, 7). Because I had completed the autoethnographic writing prior to the interviews, I had a repository of memories and experiences I could pull from during interviews. If an interview participant mentioned something that related to my own experience, I would share that experience. This back-and-forth led to interview participants opening up about their work, providing specific examples and anecdotes, and an increased level of trust and rapport between myself and the interview participant.

Integrating Autoethnography into Sample Site Analysis

The autoethnography and sample site analysis were done in tandem, leading to reciprocal opportunities between the two methods. I purposefully integrated these two methods because of the symbiotic benefits between them. The autoethnographic reflections were improved by physically being in the park I was reflecting about. The sensory inputs from being in the park brought up memories I may not have accessed had I not been in the space. Similarly, the site observations were improved by being in an autoethnographic headspace while on site. Memories provided a roadmap that guided present observations and sparked curiosities about the changes that had taken place on site. The evolution of these spaces was often tied to evolution of plant communities through plant growth, plant pruning, plant die-off, and new plantings. This approach also allowed me to access both a maintenance worker's perspective and a landscape designer's perspective. Being primed by the intentional focus on autoethnography allowed me to not just focus on design elements but also on the interaction between those designed elements and the maintenance of them.

Interviews

This research involved conducting interviews with eight SPR staff. The interview participants represent over 70 combined years of experience working for SPR within three areas of expertise: maintenance workers who work directly with landscapes, maintenance managers who oversee maintenance operations, and in-house

landscape architects who oversee SPR landscape design decisions. Interview participants were asked about their experience and expertise with landscape maintenance at SPR. The interview questions are structured to collect experience and perspectives about the interplay between design and maintenance in Seattle's public parks.

The interviews were one-on-one conversations conducted over a video call or phone call. Interviews typically lasted from 30 to 60 minutes. Each interview was structured around a pre-determined set of questions tailored to each of the 3 types of experts I interviewed: maintenance workers, maintenance managers, landscape designers. The order of the questions changed depending on interview participants' responses. This approach upheld a natural flow of conversation and allowed for follow-up questions on topics that were especially interesting to participants. Interviews were recorded when participants gave consent and notes were also taken and typed. In one instance when an interview participant preferred not to be recorded, just notes were taken during the interview. After the interviews, the recordings were transcribed.

Interviews are a crucial method to address the aims of this research topic because SPR maintenance workers are subject matter experts, and the inclusion of maintenance worker perspectives is a fundamental component of bridging the gap between landscape design and maintenance. Interviews are an important method to understand the SPR-specific issues, challenges, and opportunities existing at the intersection of design

and maintenance. Speaking with subject matter experts brought in information that is specific to SPR, rather than general knowledge. Interviewing subject matter experts also offers a model for collaborative and respectful design that integrates the expertise and experience of the people who will be caring for built landscapes. It acknowledges maintenance professionals as designers in their own right and seeks to break down the arbitrary and classist division between design, construction and maintenance. This project is premised on a need for designs to be informed by maintenance constraints and driven by the perspectives of maintenance workers. Interviews with maintenance workers bring their perspectives into the broader conversation. These conversations also led to a deeper understanding of the work that is already being done at SPR to bridge the gap between design and maintenance. This understanding of the current realities surrounding design and maintenance leads to recommendations that are more realistic and relevant.

Sample Site Analysis

The third data collection method used in this study is sample site analysis. Site analysis is important for the way it grounds this research in tangible examples. The method for selecting sites was based on feasibility and applicability to the ultimate design goals of this study, which will be undertaken at the small and general scale of typologies.

Analyzing sample sites allows for a representative snapshot of the bigger picture. By looking at similar

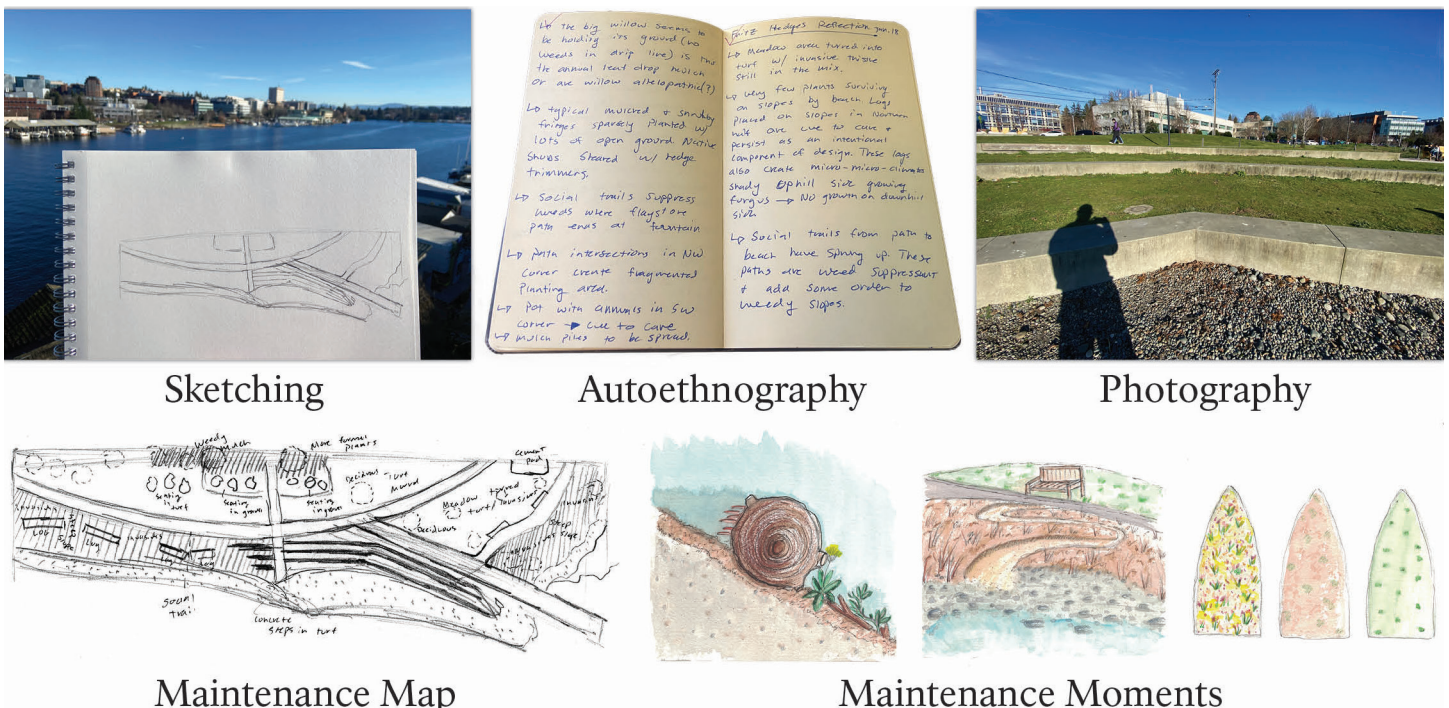


Figure 3.2 Summary of the site analysis methods. Image by author.

sites—small to medium developed parks—observations are connected to a consistent context which allows for the identification of patterns. Looking at specific sites also highlights what is working well and what needs improvement. The analysis of the design/maintenance observations at the site scale provides an important source of inspiration for the development of design/maintenance strategies and typologies, which will conclude this project.

Four parks were chosen for analysis in this study: Hubbard Homestead, Fritz Hedges, 12th Ave Square, and Benefit Playground (see Figure 3.2). These were chosen based on the following set of criteria. First, all four parks are sites where I have worked. Second, they were chosen for their spatial arrangement within Seattle. They roughly form a connect-the-dots transect running north-south through the center of Seattle. Third, the sites fall within four of the eight maintenance districts (color coded in Figure 3.2), offering a sample of the local differences between maintenance operations in different parts of Seattle. Fourth, their overall size (small to medium) suited this study because site analysis could focus on the individual elements and maintenance moments without getting caught up in the macro design features of a larger park. Finally, the sample sites also offer insights into contemporary design trends and practices and how those

designs fare in the real world because three of the four sites were designed by local landscape architecture firms and constructed within the last 15 years (Hubbard Homestead, 2011; 12th Ave Square, 2019; Fritz Hedges, 2021; Benefit Playground was completed in 1982).

I visited and observed these four Seattle parks to analyze the ways landscape designs and maintenance activities overlap. During the site visits, I used a walking method to get grounded in the site and explore its different components. During each walk, I noted locations of design and maintenance overlap on a hand-sketched maintenance map and took photographs of these instances. After each site visit, I distilled these observations into three watercolor sketches of “maintenance moments,” which highlight maintenance design takeaways from the site (see Figure 3.3). Since these diagrammatic watercolor sketches are intended to distill and highlight overall lessons from the sites, having the space and time to digest site observations before completing the sketches allowed for reflection and increased clarity.

Descriptions of Sample Sites

Hubbard Homestead Park

Hubbard Homestead is an urban neighborhood park in the Northgate neighborhood of Seattle (see Figure 3.4). It is the northernmost of the sample sites and sits within

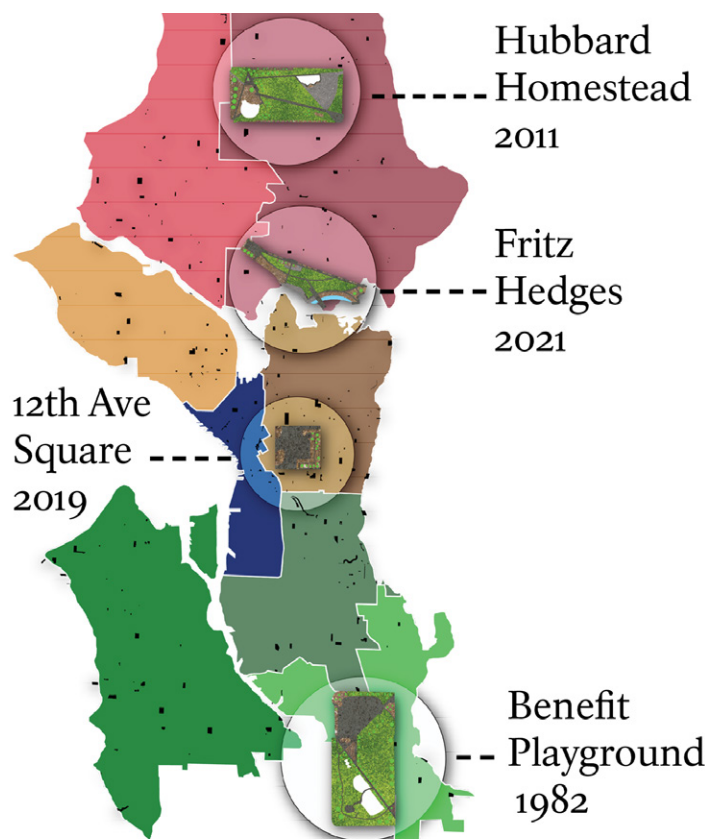


Figure 3.3 The locations and opening year of the four sample sites. Image by author.

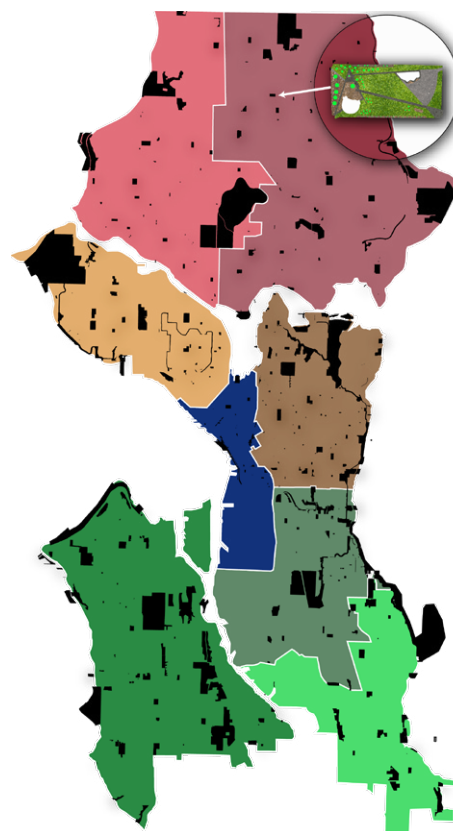


Figure 3.4 Hubbard Homestead Park location. Image by author.



Figure 3.5 Satellite image of Hubbard Homestead Park.
Source: Google Earth.

the northeast maintenance district. The park site was formerly a park-and-ride facility until it was developed into a neighborhood park which opened to the public in the spring of 2011. Mithun was the design consultant in partnership with SPR.

Hubbard Homestead is composed of several elements (see Figure 3.5). The park includes a large turf area in the middle bisected by a paved path that doubles as a maintenance access road. The NE corner of the park features a playground that was added in 2026. The SW corner of the park features a popular skate park. A large shrub bed forms the western border of the park with smaller adjacent shrub beds separated by paved paths. The northern border of the park consists of a row of trees as does the southern border. New tree plantings are situated in several areas of the turf, some in neat lines, others in pairs or clusters. Observations identified zones of overlap between design and maintenance related to fragmentation of shrub beds and the conversion of shrub beds to turf.

Fritz Hedges Park

Fritz Hedges is an urban park in Seattle's University District (see Figure 3.6). It sits on the shore of Portage Bay. It was designed by the Landscape Architecture firm Walker Macy and was completed in 2021. It is a new acquisition to the Seattle Park system and was added to the workload of the northeast maintenance district upon completion. It offers a unique case study as a relatively recent park design. The establishment and initial maintenance of the park was disrupted by the COVID-19 pandemic. As such, it offers a stark example of the need for design and maintenance to be compatible.

Fritz Hedges Park is composed of several elements (see Figure 3.7). This park contains a large turf area in the northern half, bordered by planted slopes leading down to the water on the southern edge. These two areas are separated by a paved path network. A large area of what is now turf used to be planted with meadow

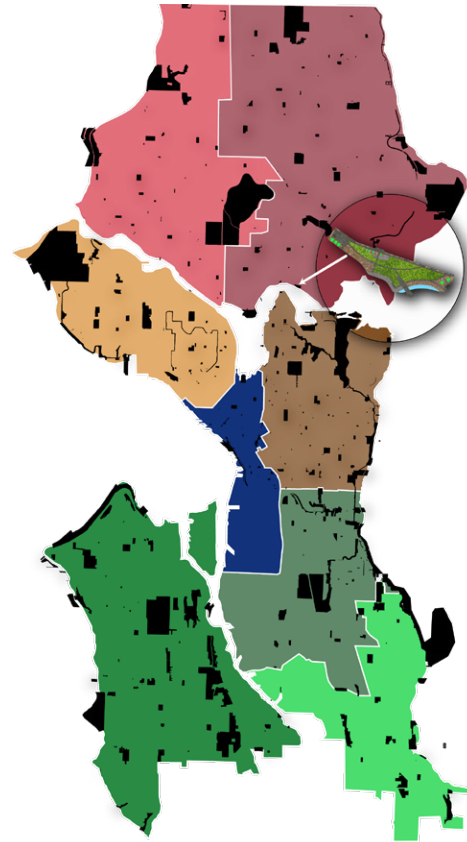


Figure 3.6 Location of Fritz Hedges Park. Image by author.



Figure 3.7 Satellite image of Fritz Hedges Park. Source: Google Earth.

species when the park first opened. This area was overtaken by invasive weeds and eventually converted to turf. The park also contains a raised deck extending out to the water, a zone of terraced concrete stadium seating intermixed with turf, and a gravel seating area. On its northern border, the park is bounded by a sidewalk with a series of street trees. Observations identified zones of overlap between design and maintenance related to the conversion of shrub beds to turf, vegetation encroachment, and the presence of “social trails”—informal trails created by repeated foot traffic.

12th AVE Square Park

This park is also a recent addition to Seattle's public park system, being completed in 2019. It was designed by the firm Hewitt and handed over to be maintained by SPR. It is the smallest of the sample parks and is situated centrally in Seattle next to the Seattle Central campus (see Figure 3.8). This park is categorized as a pocket park due to its size, and is bordered by a home to the east, a coffee shop to the north, and a restaurant to the south.

12th Ave Square Park is composed of several elements (see Figure 3.9). The park features a central paved plaza with seating, a large wooden table, and a public art canopy overhead. The western border is punctuated by two curved shrub beds separated by a paved access corridor. The eastern edge of the park is delineated by a rectilinear planting area, which extends partially along the northern and southern edges of the park. This contiguous planting zone is separated into two elevations by a wall built of repurposed asphalt slabs. The upper elevation is planted with trees, shrubs, and groundcovers while the lower planting strip is primarily planted with a dogwood cultivar and left unmulched as a rain garden. Observations identified zones of overlap between design and maintenance related to fragmented and vaguely defined shrub beds, and structural delineation of shrub beds.

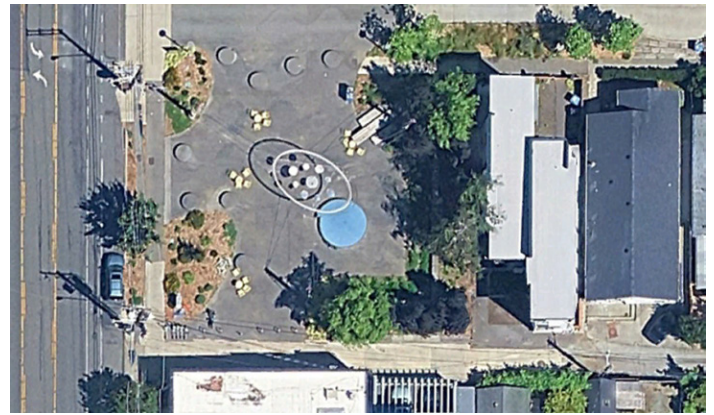


Figure 3.9 Satellite image of 12th Ave Square Park. Source: Google Earth.

Benefit Playground Park

Benefit Playground is the southernmost sample site, occupying a neighborhood site at the southern end of Beacon Hill (see Figure 3.10). Comprised of a basketball court, skating features, a lawn, a playground, a picnic shelter, a network of paths, and a public art sculpture, this park represents a complex mix of features. It is the oldest park in this study, having been completed in 1982.

Benefit Playground contains many landscape elements (see Figure 3.11). This park is composed of a large turf area in the middle of the park, bisected by the main paved trail and punctuated with programmed elements.

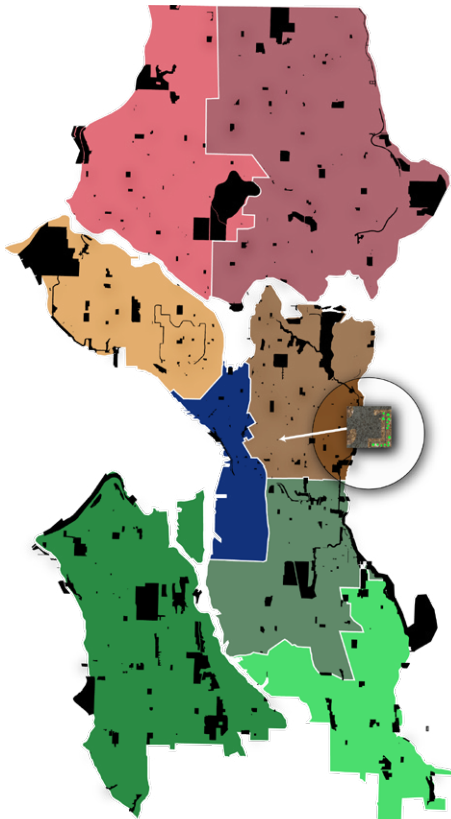


Figure 3.8 Location of 12th Ave Square Park. Image by author.

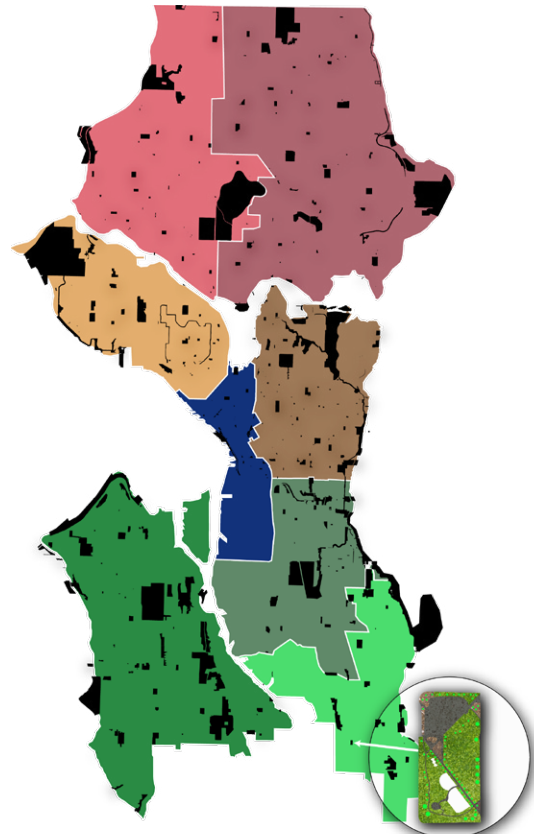


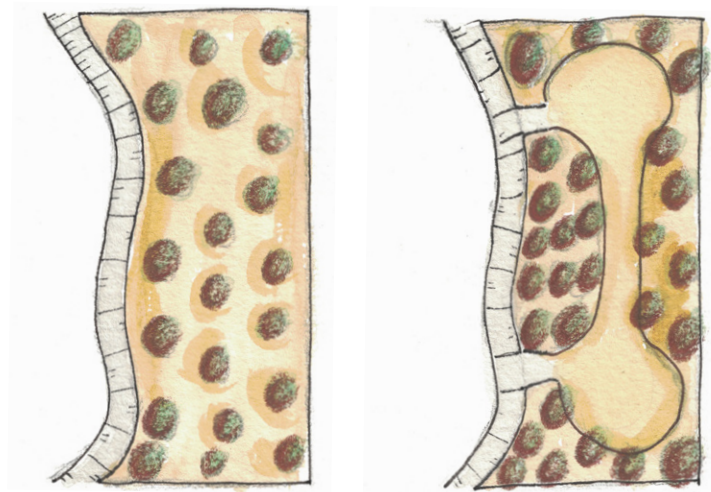
Figure 3.10 Location of Benefit Playground Park. Image by author.



Figure 3.11 Satellite image of 12th Ave Square Park. Source: Google Earth.

These programmed elements include a play area and a public art sculpture. The main path is bordered on both sides by an allée of mature trees. The SW corner of the park is occupied by a picnic shelter. The northern third of the park is paved with a basketball court and skateboarding structures. This area is bordered by a mix of planting beds and turf. The northern edge is also sloped. Small islands of shrub beds sit next to this paved area. A paved path winds along the western boundary beneath mature trees, and a sidewalk borders the park on its eastern boundary. Observations identified zones of overlap between design and maintenance related to the fragmentation of shrub beds, and the placement of new tree plantings in passive turf areas.

Chapter 4: Results



“The hand that wields the pruning shears holds the future of the project.”

(Kellum, 1999, 108)

Autoethnography

Results

The autoethnography results reported in this section combine reflections about the maintenance work that was done at all four sample sites. Findings are organized into the following themes: Daily maintenance realities, landscape typologies, reasons for maintenance, aesthetic goals of maintenance, and designing while maintaining. They reflect on maintenance activities that were done while I was working with a small crew of gardeners. This crew was not constrained to a maintenance district, but worked citywide. The following is an explanation of the key takeaways from the autoethnographic reflections.

Daily Maintenance Realities

A theme that became clear through autoethnographic reflections is the physically and logistically challenging aspects of landscape maintenance. A job as a maintenance worker on the landscape crew at SPR entails a 40-hour work week primarily spent outside in all weather conditions. The work itself is physically demanding and tiring. The physicality of the job primarily comes from directly interacting with and manipulating vegetation, soil, and inert elements such as mulch, gravel, stones, and logs. Another main physical relationship is between human and machine as a majority of landscape maintenance work involves operating handheld motorized equipment such as a line trimmer, hedge trimmer, or leaf blower. Handheld tools were also used frequently, each with its own physically taxing characteristic. Hand tools include a variety of shovels, rakes, pitchforks, wheelbarrows, loppers, and hand pruners.

In addition to the physical component of landscape maintenance, autoethnographic reflections highlight the logistical component of landscape maintenance. Because I worked on the landscape crew, which works citywide, these logistical complexities were more obvious. The project list of the landscape crew includes dozens of parks all throughout Seattle, each with unique needs. Each of these job sites comes with unique logistical challenges in terms of the type of equipment needed, where to source materials, transportation routes of materials, coordination with the district crew, and the travel time between the maintenance shop and the job site. The combination of these logistical challenges creates a unique logistical ecosystem for each job. This logistical ecosystem needs to be reestablished for each

new park and each new project. This amounts to a considerable amount of time, energy and resources to set up the conditions for work to take place. The amount of completed work relative to this typical logistical lift varies by project.

Landscape Typologies

The autoethnographic writing method also brought forth consistent patterns of maintenance. The majority of vegetated landscapes that received maintenance are classified as planting beds. These spaces are composed of a base layer of soil, a mix of horticultural plants, and arborist woodchips as a mulch. These planting beds are bordered by paved areas and turf areas. The plants in these areas are primarily deciduous and non-native. The plants are most often perennial shrubs with the occasional tree included. Most of the tree species are deciduous.

While conducting the site analysis I noticed a clear distinction between the landscape types that our crew maintained (plant beds) and the landscape types that district staff maintained (hardscape and turf). This meant we focused on keeping vegetation confined to its intended growing area, areas themselves as well as instances where these other landscape areas overlapped. If a shrub was growing into a path for example, we would prune it back. Or, if turfgrass were growing into a shrub bed, we would weed it back and redefine that edge. These examples show that maintenance tasks often served to redefine the distinction between landscape typologies.

Reasons for Maintenance

The autoethnographic reflections also highlight common reasons why maintenance work becomes necessary. At the four sample sites, most of the maintenance work I participated in was aimed at addressing a backlog of deferred maintenance. This is due to one of the landscape crew's primary roles to provide additional support to district gardeners, particularly for projects involving substantial landscape renovations. As a result, the maintenance experience documented through autoethnography reflects a framework of renovation and restoration rather than routine ongoing maintenance.

In general, the autoethnographic research revealed a consistent pattern across the sample sites of infrequent ongoing maintenance that leads to a big maintenance event. The reasons for this infrequent maintenance had to do with the ratio of gardening staff to plant beds with too few staff available to adequately provide regular and ongoing maintenance for the high number of planted areas. SPR staff

with the job titles “Senior Gardener” and “Gardener” are responsible for maintaining planted areas such as shrub and planting beds, and most maintenance districts employ one or two senior gardeners and one gardener.

Besides this backlog of maintenance, other landscape disturbances necessitated maintenance. The majority of maintenance activities addressed an imbalance in the desired plant community—intended plant species dying or growing too big and undesirable plant species encroaching. The reasons for these imbalances can be attributed to a number of disturbances: the proliferation of weeds, plant die-off, lapses in irrigation, mechanical injury from encampments or other park users, unhindered plant growth, and decomposed mulch.

Aesthetic Goals of Maintenance

The end goal of the maintenance activities conducted at the four sample parks was typically associated with aesthetics and public safety. The lack of adequate maintenance resources had shifted these planted landscapes away from their intended designs. Maintenance activities were accordingly intended to bring these landscapes back within the bounds of those initial designs. For the planted areas, this usually meant restoring the intended mix of plant species by removing weeds and dead plants and adding desirable plants. In other cases, the existing plants were healthy, but they had become overgrown and needed to be pruned back. The rationale for reducing the volume of vegetation addressed public safety concerns. In particular, maintenance concerns sought to address how tall shrubs impede sight lines and dense vegetation could invite illicit activity. The aesthetic ideal then was to lower the height of shrubs and thin them out. In some cases, thinning shrubs meant pruning them so that there was space between each shrub.

The success of maintenance operations was measured based on meeting SPR aesthetic standards of tidiness related to notions of public safety. Aesthetic results were a priority and a point of pride among crew members. For example, the ideal shrub bed based on these aesthetic standards was one that is weed free, with an even distribution of healthy shrubs that don't block sight lines, and an even layer of arborist woodchip mulch to prevent weeds from taking root. The borders of the planting bed should be crisp and clearly defined without encroachment into adjacent materials. If the shrub bed is next to a paved area this means no mulch spilling onto the pavement and no vegetation growing into the paved area. If next to turf, the mulch should not spill into the turf and the turfgrass should not impede into the mulch.

Designing while Maintaining

The autoethnographic findings show how maintenance activities can change the design of a landscape, and how they can be considered a design process in their own right. All of the maintenance activities described through autoethnography contain a range of design decisions, from spontaneous design choices made in the moment, to holistic redesigns of spaces established through a prolonged process of collaboration. Spontaneous design choices play out on the micro scale, such as specific pruning cuts to a shrub or tree. Over time, these micro design decisions can change the form of a landscape, but the overall form of the original design remains intact. In this model, the relationship between maintenance and design is aimed at bringing a landscape back to its original design intent after a disturbance. This proves to be in many cases in the autoethnographic findings.

Maintenance operations can also intentionally change a design, shifting it from its original intent to something new. This design shift through maintenance played out in autoethnographic examples where the original planting plan was revised through maintenance. In these cases, the original plants had not fared well or outgrew their space. The plants were removed and replaced with different plants chosen by senior gardeners in collaboration with district staff and in-house landscape architects. The rationale for these new plants is often related to the ease of maintenance and their mature size being more appropriate for the space. Another common practice was to shift the typology of a landscape, most often from a planting bed to turf. In these cases, the planting bed was deemed unmaintainable due to limited staff and resources. A conversion to turf was justified due to the ability of district staff to maintain the area through mowing a lot quicker and easier than it would take a gardener to weed, mulch, water, and replace dead plants.

Interview Results

This section summarizes the results from the eight interviews conducted as part of this study. The results are organized into two sections: systemic results and design results. The systemic findings relate to the organizational structure of SPR, Labor division, processes, and resources. The design results relate to specific park elements such as planting selection, arrangement of elements, and other tangible park designs and maintenance operations. Each of these two sections is divided into

Systemic Challenges	Systemic Opportunities
Time Pressure leading to reactive maintenance	Desire to do more gardening tasks
Limited Horticultural Staff	Desire for more training
Limited collaboration between maintenance and design	Desire for more collaboration between maintenance and design
New park acquisitions overwhelm maintenance staff	Desire for realistic novel approaches
Design Challenges	Design Opportunities
Incompatible planting plans	In-house horticultural resources
Establishment requires high levels of maintenance	Network of maintenance access and infrastructure
Plant survival in harsh urban environments	Edges and material transitions to protect vegetation
Public safety concerns	Gardeners want to design
Preference for turf	Willingness to try novel typologies

Figure 4.1 A summary of the interview results.

challenges and opportunities. Challenges were framed as problems by interview participants (participants), whereas opportunities were framed as desired outcomes (see Figure 4.1).

Systemic Challenges

Time Pressure Leading to Reactive Maintenance

A common challenge expressed by interview participants was not having enough time to complete the ideal maintenance for a site. An SPR maintenance manager said, “I think gardeners are as frustrated as anybody because they know what needs to be done and they just don’t have time to take care of it.” The issue of limited time was explained in relation to a heavy workload for maintenance workers. Maintenance workers felt they had too many parks and spaces to care for in the time they had. This sentiment was expressed by maintenance workers in district positions as well as maintenance workers on citywide crews.

Interviewees noted that there was an imbalance between tasks and time related to the overall amount of parks assigned to individuals or crews and to the nature of those tasks. More refined gardening tasks done by hand, such as weeding and pruning, were identified as taking more time than motorized maintenance activities such as mowing turf. As one SPR crew chief put it, “you could get one of these big riding lawnmowers and mow an area faster than you can go to all the parks and weed the beds and make them look good.” As such, these quicker tasks seemed to happen more frequently, especially if the time spent at a work site was limited.

Interview respondents described an infrequent maintenance schedule for shrub beds in particular. Ideally, these shrub beds would receive maintenance multiple times a year, but in some cases a shrub bed may only get maintained once a year or less frequently. One Senior Gardener said of one particular project:

“Sometimes we went to that project four or five times in a year just because we had time

and we were close. But then sometimes we only made it once, and sometimes we didn't make it [there] any of that two years. So what we do is go and do a big cleanup at the end of that two years."

Interview participants described substantial overhauls to shrub beds as a result of these infrequent visits. A typical once-a-year visit might involve removing large amounts of weeds, dead plants, soils with weed seeds, shearing or trimming back overgrown vegetation, and adding a thick layer of arborist wood chips. This chronic time crunch has led to participants feeling like they are always trying to catch up rather than prevent issues. As a result, participants described a prevalence of horticultural maintenance activities as being reactive rather than proactive. This type of reactive maintenance was described as "tidying up" or "polishing" planted areas when they had become overgrown with weeds rather than sustaining long-term benefits.

Time pressure also leads to different ways maintenance gets distributed throughout a geographic area and within each park. Respondents discussed how higher profile parks tend to get more maintenance compared to smaller, less well-known or popular parks. One participant said:

"in certain places, you might want to just make things simpler just because things aren't going to get done. Southwest [maintenance district] has more parks than any district...and Southwest is one of those districts that's got a lot of parks that are on the water, so they're high profile. So, you know, there's a lot of room for neglect or error because they have to do certain things on certain parks all the time."

A similar maintenance distribution was identified as it relates to areas within a park. Areas that receive more use from the public get prioritized for maintenance such as restrooms, sports fields, playgrounds, and other programmed areas. In contrast, passive vegetated areas such as passive turf, shrub beds, and forested areas are deprioritized.

Limited Horticultural Staff

A challenge expressed by the majority of interview participants is the limited number of parks staff with the horticultural knowledge and skill necessary to care for complex plantings. One senior gardener said, "There's two of us [Senior Gardeners] and we oversee all of

the big picture horticulture-related maintenance that goes on in this district." Participants distinguished this "horticulture-related maintenance" from other regular park maintenance tasks such as mowing, pressure washing, cleaning restrooms, picking up litter, leaf blowing, and other tasks. The roles at SPR specifically devoted to gardening are, "Gardener" and "Senior Gardener." Interview participants described a labor division at SPR where maintenance workers with other job titles, such as "Maintenance Laborer" rarely have time to assist with gardening tasks. As one Senior Gardener put it, maintenance laborers:

"have to spend a lot of their hours doing things like trash mitigation and pressure washing and maintaining more of the outdoor parks facilities...the wading pools, the tennis courts, the playgrounds, the shelters—a lot of hardscape maintenance goes into parks grounds maintenance and they spend a lot of their time on that...so when we can, we'll pull them if we need extra...but it's really just a privilege to take their time from all the various tasks that they need to do"

Participants noted that each district has one to two Senior Gardeners and likely one Gardener. The other source of labor for horticultural tasks at small to medium neighborhood parks comes from the landscape crew, which operates citywide and had one Senior Gardener and four other crew members at the time the interviews were conducted.

Horticultural staff levels are relatively low, but also unstable, according to participants. The first reason for fluctuating staff levels is availability of temporary special assignments. SPR staff can transfer temporarily to a different position when an opening becomes available. When this happens, that staff member's original position either remains empty, or gets filled by someone else transferring in temporarily. This shuffling of staff allows for cross-training, but it can also interrupt established crew dynamics and reduce the amount of long-term institutional knowledge on a crew. The second reason for fluctuating staff levels is the hiring of seasonal workers. Seasonal jobs are term-limited, so these employees aren't able to establish continuity with projects. Overall, participants described a need for more gardeners. As one maintenance manager put it:

“I do think Parks could do more, in my view, to lean into its gardener bench, to really build and support people gardening in the districts to have gardeners have more capacity. Have double or triple the number of people doing that role and have them engage better with designers earlier in projects.”

New Park Acquisitions Overwhelm Maintenance Staff

One systemic challenge that was brought up repeatedly is the frequent acquisition and design of new parks without an increase in maintenance staff. This was identified as a major block to achieving maintenance goals because the ongoing addition of new parks to the SPR inventory increases the maintenance workload. One maintenance manager said, “We have shiny new parks. We should have additional resources.” These new acquisitions tend to be small to medium developed neighborhood parks and add to the category of maintenance that this thesis project is particularly focused on. Because this type of park tends to have outsized maintenance requirements due to a lack of an economy of scale, these new acquisitions stretch maintenance resources thinner.

The perception based on participants’ experiences is that in most cases the design and construction of new parks is funded, but no new maintenance staff are hired. As one senior gardener commented:

“Let’s say this year we’ve got six new parks coming online. And in these six new parks we’re going to require one more gardener and two more maintenance laborers. In the perfect world, that’s what should happen. But what happens is we create this park—here’s this park—and you get no new positions.”

Other participants identified certain examples, such as Fritz Hedges Park, which was added to the district’s inventory and assigned to a maintenance worker who was already assigned several other parks to care for. This participant said that a new park like Fritz Hedges with its complex planted areas would require at least 1 full-time staff fully devoted to it to ensure successful establishment

and ongoing maintenance. Another participant shared an example of the Magnuson Park Wetlands project, which did include funding for a full-time devoted maintenance worker, but the participant said this was rare.

Limited Collaboration Between Maintenance and Design

Participants’ remarks about the level of collaboration between landscape designers and maintenance workers fell into two categories: collaboration with in-house landscape architects and collaboration between SPR staff and external design firms. Projects that rely on in-house collaboration tend to involve smaller-scale landscape renovations in existing parks. These renovations often involve collaboration between a senior gardener and/or district crew chief and the in-house landscape architect assigned to that district. Participants described more direct collaboration where the preferences of maintenance workers were often integrated into the final design. Because of their size, these projects don’t usually involve the extensive review process required for larger projects. Collaboration between SPR staff and external design firms pose their own challenges. In these cases, external design firms are brought in for Capitol Improvement Projects (CIP) usually involving the design of new park acquisitions. The perception and experience of participants was that the collaboration for CIP projects is more distanced and that the preferences of maintenance workers are often not integrated robustly into the final design.

There is an official process for SPR staff to provide feedback during design review, which has some limitations. The online system to collect feedback on a proposed park design is called “Proview.” Most participants identified this system as the main mechanism for providing feedback on a proposed design. While anyone assigned to a project can provide feedback on Proview, participants described challenges to providing feedback in this system. Due to busy schedules and other demands, they may not have time to provide in-depth feedback. Also, an SPR staff member must be assigned to the project to give feedback, and the maintenance representatives typically assigned to give feedback are in managerial positions not labor positions. One Maintenance Manager said, “The people who are commenting in Proview are usually at a higher management level and they’re not necessarily the people who are the gardeners

on the ground.” In most cases participants expressed a perception that feedback given through Provview was not integrated as much as they would have liked into the final design.

Interview participants described a perception that designs from landscape architects were not scaled to existing maintenance resources. These discussions of the disconnect between designs and realities tended to revolve around a perception that designers were prioritizing aesthetics above maintenance considerations. Participants said that designs—especially planting plans—are guided by a preference for “cool” and aesthetically interesting plants rather than functional plants that can be maintained. As one Senior Gardener noted:

“When you look at the plans and the initial drawings of visual illustrations of what it was going to look like, they’re incredible and gorgeous. But we were given a whole new park without anyone asking how much labor this is going to take to maintain, to weed these massive shrub beds and keep the invasives down.”

These perceptions are that landscape architects are either unaware of maintenance realities or prioritize other considerations above maintenance considerations. One strain of thinking from participants is that external landscape architects aren’t aware of existing maintenance constraints, including a lack of understanding of equipment, maintenance operations, staffing levels, and available resources. Many comments pinpointed this disconnect in landscape designers’ misunderstanding of the day-to-day reality of maintenance labor, often including a wish for designers to come out into the field and experience maintenance work themselves. One Senior Gardener said:

“Come work with us for a day...come work on an install...get dirty for half a day...when you plot plants on a map, right on CAD or however you’re doing it, it is so easy to plunk down a circle...what is not easy is actually figuring it out...set out the plants, dig them in, think about the roots. No one in [landscape architecture] actually knows how hard doing the job is.”

This gap between designers and maintainers was attributed to the designs but also to the lack of an

informed handoff of a finished project. Participants repeatedly provided examples of newly designed parks being handed off to maintenance workers without explanation of design intent or additional training. This lack of a handoff means that maintainers get assigned a new park to care for without knowing the ideal condition or the reason behind designs. This lack of explanation was identified as especially problematic for new plant species that may be unfamiliar to maintenance workers. Without a designer identifying the plant, explaining its ideal form, and its purpose, maintainers are left to wonder, which can lead to maintenance operations that damage the plant. As one Senior Gardener said:

“Make it really interesting, make it functional, explain how the maintenance is going to go, then the crew gets excited about it because they can envision what it’s going to be.”

Systemic Opportunities

Desire for More Training

An area of opportunity identified by participants was an increase in horticultural training for maintenance workers. This was posited as a way to increase the capacity of existing staff to care for more complex planting areas. Training was deemed necessary to help staff identify unfamiliar plants, learn new horticultural techniques such as selective pruning, and other new techniques related to gardening. One Maintenance Manager said:

“If you want this to evolve how you’ve designed it...take the time to walk through...with the people that are going to be maintaining this every day to point out the different species and the expected or needed maintenance of them.”

Participants noted the need for training at two different levels. The first is training existing horticultural staff about the specific maintenance requirements of new designs. In this model knowledge would be passed from landscape architects to gardeners. Another level of training would involve training district staff who don’t normally perform horticultural maintenance tasks. In this model knowledge would be passed from senior gardeners and gardeners to district staff. A Crew Chief explained how this might work:

“while [the landscape crew is] renovating those garden beds, why don’t we invite the district staff to come and work with us from start to finish...so that they understand why we’re doing stuff, how we’re doing stuff, and then when to maintain proper pruning time...I thought it would be good to help with the buy in of all the park staff.”

In some cases this could happen within a district or this could involve the landscape crew educating district gardeners.

General training from external sources was also identified as a type of training. One example that is currently underway is to train the grounds crew in organic gardening. Similar topical education experiences could be offered to staff as a way of building skills and promoting changes to maintenance operations. Some participants identified this as an important component of promoting cohesiveness and getting everyone on the same page.

Desire for More Collaboration Between Maintenance and Design

Interview participants called for increased collaboration between landscape designers and maintenance workers. Increased collaboration would increase understanding on both sides of the divide. Maintenance workers expressed a desire to learn from landscape architects. They wanted more of a back-and-forth during the design process, and they wanted final designs explained to them so they knew how to best take care of them. As one Senior Gardener put it:

“I just think there could be so much more interaction [between designers and maintainers] and it could only be beneficial. I think that maintenance has a lot to share about things that work and don’t. And you can really only get that day in, day out seeing a landscape over and over and over. And I just think that if they were more involved in each other’s day to day, it would benefit both.”

Maintenance workers also expressed a desire to share their knowledge with landscape architects. They specifically identified expertise in plant selection and want to have more of a say in which plants get selected for the parks they have to maintain.

Participants shared a desire for increased collaboration but also different forms of collaboration. Some

participants shared ideas for improving the Proview process, which included making it mandatory and including more maintenance workers in the process, and becoming involved earlier in the design process. Some participants shared a desire to collaborate in-person on site, expressing the thought that both parties could benefit from looking at site conditions in person. One Maintenance Manager emphasized, “I think the other thing that’s really key...the designer has got to really be on site during the design process.” Other ideas for improvement centered on the need for prolonged collaboration. This version of collaboration would include maintenance input during all phases of the design and continued contact with designers after project completion.

Desire to do More Gardening Tasks

Some participants expressed an interest in doing more gardening tasks as part of their work. These sentiments revolved around a desire to do more in-depth care of planted areas with hand tools but not having the time. This desire was about wanting to do more ongoing and preventative maintenance rather than reactive overhauls of planted areas that had gone too long without maintenance. As one Senior Gardener put it, “The finer forms of gardening are kind of like a privilege, almost luxury, way to spend your day because there’s a lot of just hard labor that needs to happen as well.” These desired types of maintenance tasks involve more work with non-motorized hand tools rather than motorized equipment. Maintenance workers described the slower, non-motorized types of maintenance as typically less physically demanding and more pleasant.

In general, participants identified the physical toll of maintenance activities as a challenge and a barrier to caring for certain landscapes. Renovating landscapes were described as physically demanding due to moving large amounts of material in the short span of a project. Motorized equipment can lighten the load but it also adds the hazards of loud noises, vibration, exhaust fumes, and non-ergonomic positions. One gardener said, “I’ll always use manual tools because I want to hear the birds.” These lighter tasks can be enjoyable in their own right, and they also make maintenance workers want to care for that landscape. In contrast, some participants described having an antagonistic relationship to sites that required high levels of unpleasant maintenance. One Gardener said, “And so the more physical work this person is going to have to do to achieve the goal of the landscape architect, the less they’re going to like that task.”

Instead, maintenance workers are more motivated and invested in caring for sites that are pleasant to work at.

Desire for Realistic Novel Approaches

Participants wanted cohesive design approaches that are functional and maintainable. These sentiments often centered around a need for designs that aligned with maintenance realities. The rationale given for the need for increased functionality was that the current approaches aren't working. Many participants felt that the design of shrub beds in particular often required large-scale renovations and high levels of maintenance. They expressed a desire for a different approach. One Senior Gardener described the desire to rethink designs that don't work:

"If something does die, we do replace it... But also, why did it? So I'm looking at it more holistically now. Instead of just putting it right back in the ground and being like, oh, we rocked it. No, like, why did it happen?... And so instead of immediately jumping back into, 'we've got to replant, we've got to make it look great,' hold on just for a second and let's really look at the site. Is it the irrigation? Is it the soil? Is it, you know, human, animal damage? And if it is, can we rectify that? Or is it something that, hey, maybe this is a place that we don't plant because it's not working?"

In many cases, designs of shrub beds were deemed unrealistic and incompatible. Participants called for increased clarity and simplicity, and expressed a willingness to test out new approaches and try a different way of doing things. One Crew Chief summed it up by saying, "I think simplifying things is the way to go."

Design Challenges

Incompatible Planting Plans

Participants identified planting plans as the main driver of maintenance challenges resulting from design choices. These incompatibilities were roundly connected to shrub beds in particular. One pattern among responses is that landscape architects overplant shrub beds. Another pattern is that landscape architects specify plants that eventually grow too big for their location. Plant density and plant size are problematic because of the additional work required of maintainers to either thin out dense plantings or repeatedly prune back overgrown

plants. Participants theorized that the reason for these dense planting was so the site would look good at the ribbon cutting, and that designers are not thinking long term about plant growth. As one Maintenance Manager pointed out:

"We got huge shrub beds failing. And people talk about, oh, the soil was bad, this was bad, the other thing was bad. But when you look at the planting material, it's like, well, it all looks cool...but we want to design to thrive, not to design to be cool."

Many responses pointed to a need for planting designs to be more practical rather than aesthetically informed. These sentiments show a perception among respondents that designers preference aesthetic qualities of plants over their ability to be maintained. This sentiment appeared in comments that planting designs from external design contractors are often too complex and feature "cool, showy plants" rather than practical ones. Participants said these types of plants were often unfamiliar to maintenance workers and didn't hold up to harsh urban conditions. The proposed remedy is to simplify the plant palette. One Maintenance Manager said:

"If I see a plant palette that has a really high density of different species in a small place, I will say something at the earliest stage [of the design process], that they [are providing] a planting plan that our crews aren't trained to really recognize."

Other responses about planting designs honed in on the advantages and disadvantages of particular plant characteristics, particularly the distinctions between native or non-native plants and evergreen or deciduous plants. Opinions varied regarding native plants vs. non-native plants with no clear pattern emerging. Native plants were seen as beneficial for being slow-growing, providing a sense of place and being identifiable by more maintenance workers. Non-natives were said to present more options, have a better chance of surviving, and potentially be better adapted to changing climate conditions. Strong cases were made for evergreen plants instead of deciduous plants due to the ability of their persistent foliage to block out weed seeds and slow surface runoff of stormwater through capture and percolation into the ground. In general, thoughts on plant selection avoided a one-size-fits-all

approach, arguing for a site-specific approach to identify the right plant for the right place.

Establishing New Designs Requires High Level of Maintenance

Interview participants pinpointed the establishment phase of a new design as being especially challenging for maintenance workers. One Maintenance Manager said:

“We have this gap in landscape maintenance that’s really critical where we fail on a lot of our spaces, which is after a capital project is complete... Needs are so much higher in that initial phase... So I think we don’t recognize that as a unique phase in maintenance. And I think we lose a lot of things in that period of time, particularly things that are more complicated or unique planting that involve multiple species.”

This establishment phase is distinct from ongoing maintenance. The establishment phase requires more frequent maintenance and involves navigating emergent situations that weren’t predicted. Participants argued that successful establishment of new plantings will prevent future maintenance problems because it will make the planting resilient to future disturbances. Successfully established plants will have more robust root systems, making them more drought tolerant. They will also have more extensive foliage, which will prevent weeds from taking root and social trails from forming in voids. Participants painted a picture of well-established planting areas requiring minimal ongoing maintenance involving occasional trimming and refreshing of mulch.

The barriers to successful plant establishment included limited time, limited staff, and incompatible designs. To establish new plantings successfully, maintenance workers need to monitor and care for these areas frequently for three to five years. Routine visits are necessary, according to participants, to check that irrigation is working, remove weeds before they take over, and replace any plant die-off. It is difficult to realize this ideal schedule of establishment due to limited resources. As one Crew Chief said:

“A new landscape—you should be able to go back to it two to three times a year. And you should probably do that for two to three years so that the plants start to get established and keep the weeds out, keep the chips and mulch up and give it the best opportunity for success. But you don’t always get that time.”

Plant Survival in Harsh Urban Environments

Several challenges to park maintenance were attributed to the urban context of these parks. The urban environment is a harsh context in which designers are asking plants to survive. One maintenance manager said, “let’s design systems that are going to thrive,” highlighting plant survival as a primary concern. Typical planting conditions are situated on park edges, in compacted soils, and often bordered by pavement. The placement of small shrub beds on the edge of parks means they are vulnerable to disturbance. These disturbances were listed as weed seeds blowing in, and mechanical damage from park users. One Maintenance Manager said, “How do you protect them [plants] from the users along the edge?... The edges get hammered.” The proximity of planted areas to pavement also means an increased heat island effect where these shrub beds grow in a hot microclimate where heat-absorbing pavement dries out soil more quickly.

Public Safety Considerations

Planted areas in parks were repeatedly identified as posing public safety concerns. These concerns centered around the overall form of the planted areas relating to design choices. Overgrown shrubs were the number one safety concern because they block sight lines. Discussions of sight lines were common among participants’ beliefs in regards to park visitors’ feeling safe. Blocked sight lines create threatening areas, according to participants, and overgrown shrubs were identified as a leading cause of blocked sight lines. Overgrown shrub beds with blocked sight lines were also associated with encampments of people who are unhoused, which, in turn, were perceived as a public safety concern. Participants described trimming back vegetation significantly or removing shrubs altogether to ameliorate these public safety concerns. As one Gardener commented:

“this was safety or CPTED pruning... In these city parks, the planting and the pruning and how everything is maintained, is all designed around [making sure] law enforcement and park rangers are able to survey the park quickly, see through all of the shrubs... see everything in the park.”

Shrub beds were also associated with public safety hazards for maintenance workers who described encountering hazardous materials in these areas

while performing maintenance activities. Participants described encounters with used needles, broken glass, animal waste, and human waste in mulched shrub areas. A Gardener said, “And safety is a huge thing in this city, in a lot of cities...downtown working on these garden beds where there’s dog waste and sharp things and it’s just not fun.” Another participant said that it’s common practice and training to always use a tool when working in shrub beds, rather than gloved hands to avoid contact with these hazardous items.

Preference for Turf

During discussions of the different landscape typologies represented in small to medium developed neighborhood parks, shrub beds were framed as requiring the highest levels of maintenance while turf areas were identified as requiring the lowest level of maintenance. This perception of the relative maintenance loads between these two landscape types was consistently discussed, although not all participants agreed with this conclusion. One Maintenance Manager said, “In a lot of our parks, the turf is the dominant landscape type and that’s kind of evolved due to some lingering misconceptions that I hear stated all the time.” Turf is seen as lower maintenance by many because it can be mowed quickly by one person operating a machine. Shrub beds are seen as high maintenance because they require tasks that can only be done through human labor without motorized assistance. The typical tasks associated with shrub bed maintenance are weeding, pruning, planting, and mulching. Participants also highlighted that shrub beds in small developed parks require even more maintenance because they are more vulnerable to disturbance and less resilient. One maintenance manager described the difficulty with shrub beds:

“We don’t have time to do a lot of weeding, and a lot of landscapes fail because weeds blow in. Weed seeds blow in or are deposited by birds or whatever, and those weeds, when they take off...you get weeds proliferating and spreading throughout that shrub bed.”

However, one participant argued the opposite, that turf is more resource intensive because it requires repeated mowing throughout the year, which burns fuel, whereas a well-established shrub bed may only need to be maintained once a year.

These perceived differences in maintenance level between these two designed typologies means a preference for turf in the typical site plan for small developed

parks, consisting of a main turf area in the middle and small planted areas around the edges. Participants also described this preference as it is deployed as a solution to the perceived problems associated with shrub beds, when these shrub beds are erased and converted to turf. These “turf conversions” are a common occurrence according to participants when a shrub bed is deemed unmaintainable with existing resources. Participants described how this strategy has led to an overall increase in turf and a decrease in understory plantings throughout the Seattle park system. One maintenance manager described the rationale behind turf conversions:

“It’s easier to mow. Show up, offload your mower around a park and make it look like it’s tight—we used to say ‘tight and tidy’. And if you only have 15 minutes at each park or an hour and a half and you’ve got to go to 10 sites, that’s what you’re going to do. And so even things that were designed as landscape beds, if they tend to get weedy or have a period where they get out of hand, then the action is to come in and turf it...because it’s just a lot more legible to send someone out with a mower and have them just deal with it.”

Design Opportunities

Gardeners Want to Design

Maintenance workers expressed a desire to be more involved in the design process and shared that they were already involved in the renovations of existing areas. As one Senior Gardener said:

“[Designing is] my favorite part of the job... working day to day in an area, you see how the landscape is used more than anyone, really. You see what’s thriving, what social activities are happening, and you get ideas on better ways to use the landscape. And so it’s incredibly gratifying when you make a change and then you watch that change succeed.”

These projects involve gardeners and senior gardeners making design decisions about which plants to remove, which plants to add, and the placement of logs. Certain projects of this type and scale involved some consultation with an in-house landscape architect, but the designs were produced by maintenance workers.

Much of this type of gardener-led renovation design happened in new parks. Participants described a pattern where new parks opened to the public and within a few years some of the planted areas failed or proved to be too difficult to maintain in good condition with limited resources. In these cases, senior gardeners, gardeners, district staff, and in some cases in-house landscape architects, collaborated on a new planting plan. In some cases, the renovation converted planted areas into turf. Participants expressed a desire to be more involved in design decisions—especially plant selection—before these new parks are constructed to reduce waste and unnecessary labor by preemptively avoiding these renovations.

Participants explained that any change to a park in an area less than 1,000 square feet can be completed without requiring committee approval. These changes were the result of everyday maintenance operations, but also the establishment of new planted areas. One gardener shared their experience of designing new plant communities where none had existed before. These projects took the form of converting passive turf to pollinator meadows. This participant described conducting all steps of the process from site selection, site preparation, planting meadow species, constructing a rustic edge of logs, watering, and continually weeding and maintaining the site.

Willingness to Try Novel Typologies

In general, participants were in support of trying out new design typologies and maintenance activities. This willingness was often tempered with some apprehension about specific approaches, emphasizing the need for designs to be tailored to specific site conditions and specific maintenance resources. The support for new approaches often came with an acknowledgement that some current practices aren't working well and that participants had seen the same mistakes happening repeatedly. Participants also emphasized that the success of improvements to the design and maintenance paradigm is dependent on buy-in from maintenance staff. As one Gardener put it:

“If [the design is] really boring, if it's just like flat, boring, uninteresting—or if they're just repeating the same problems again...it's silly. You know, that's not going to excite the crew.”

Novel typologies and methods are already being piloted by SPR in certain areas. Participants described

a new program to convert passive turf areas into pollinator meadows throughout the city. These pollinator meadows increase biodiversity and pollinator habitat, and decrease maintenance inputs because they can be mowed considerably less than traditional turf. One gardener described how they strategically located pollinator turf in an area where the existing turf had been damaged by crows and raccoons digging for an invasive grub:

“One of the wildflower meadows that I planted was actually a passive turf area picked over by the crows from the grub. So what I did, because it was already all bare ground, I just raked off all the dead grass chunks and I had a clean slate already prepared. For me, that used to be just mowed turfgrass. And that's where I did my planting.”

This is an example of a citywide pilot program being adapted to a specific site by a senior gardener. Other strategies being deployed at SPR include the use of logs as landscape features. The logs come from tree removals within the Seattle Park system, increasing reuse and sustainability. Logs are placed in shrub beds to add interest, increase water and leaf retention, and provide habitat. Other novel approaches pitched by participants included adding plants that are adapted to the predicted future climate.

Maintenance Access and Infrastructure

Participants identified maintenance access as another place where design and maintenance overlap. Infrastructure for maintenance access includes roads within parks for trucks to drive on, and irrigation control access boxes. Equipment access was also mentioned in discussions around park plans that either aided or inhibited lawn mower access. These discussions identified obstacles in turf like trees that could make mowing difficult. One Senior Gardener said, “A landscape architect might not know the size of a mower that's maintaining that part. So putting trees too close together where the mower can't get in.” Access for watering new planting was also identified as an important consideration. Watering new plantings either happens using a hose hooked up to an on-site water source, or from a water truck. In either case, accessing the new plants with the water is crucial for plant establishment.

In general, participants did not think park designs significantly impede access, although some access

challenges were discussed. These challenges included increased soil compaction in areas where trucks have to drive off of paved access roads to get to a job site. Another challenge was the situation where cars would park on top of an irrigation control valve, blocking access to the irrigation.

Edges and Material Transitions

Edges and transitions between materials were identified repeatedly as zones where maintenance challenges spring up. One Maintenance Manager said, “I see our maintenance lacking most at the transitions between landscape elements, whether it’s turf to a tree, turf to a wall, planting beds to turf.” The challenges arise when one material encroaches on another. The most common are instances where shrub beds abut either turf or pavement. If a shrub bed sits next to turf, the turfgrass has a tendency to encroach into the shrub bed. This arrangement can also make it hard for a mower operator to trim that edge of turf without scraping along the shrubs, damaging the plants and the machine at the same time. If a shrub bed is situated next to a paved area, problems arise if the shrubs begin growing into the paved area or mulch spills over the edge. When this encroachment happens, it can impede circulation and potentially block sight lines.

Proposed solutions to these encroachments included adding a physical barrier between the two areas and selecting plants that won’t encroach. The first solution is intended for transitions between turf and shrub beds to stop turfgrass from encroaching and ease mowing operations. The physical barrier could be a concrete curb, or a strip of plastic or metal landscape edging material. Another type of physical barrier was to use logs to form a rustic border around a shrub bed. The other solution mentioned involved plant selection. Participants advocated for the selection of smaller, slow-growing shrubs to reduce the likelihood of shrubs encroaching into adjacent areas.

Abundant Materials

Interview participants described systems within SPR that generate materials that can be used in landscape design. The majority of this can be classified as woody material and it comes in two forms. The first is arborist woodchips, which was identified as the most commonly used material in landscape maintenance. One Senior Gardener said, “I would say, hands down, the material we utilize the most are wood chips.” These are used as mulch to increase water retention, add organic material, and prevent weed seeds from taking root. The other type

of woody material comes in the form of logs. These logs are generated through the work of the tree crew which removes hazard trees, and trees that fall in storms. Several hundred trees are removed from SPR every year, according to one Maintenance Manager who said, “I have about 800 to a thousand trees die each year.” A push is already underway at SPR to find uses for these logs.

Another important system with design implications is the in-house greenhouse operation at SPR. This crew propagates and grows plants for projects throughout SPR including ornamental perennials, decorative annuals, native plants for restoration projects, and vegetables for community gardens. Many plants are grown from seed. The plants grown in-house are supplemented with plants purchased from external vendors, but one participant said it can be difficult to source the plants they want for renovation projects from external vendors.

Sample Site Analysis Results

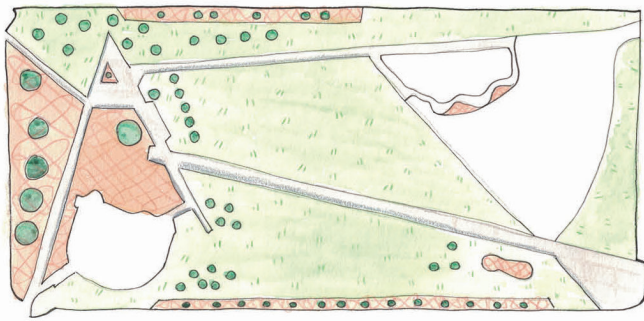
This section details the design patterns and trends observed across the four sample sites studied. The results are organized into themes to highlight the major takeaways from this research method. The takeaways are organized around identifying typical landscape elements, and typical layouts; emphasizing edges and borders; discussing condition assessments; and the tendency to simplify the original planting plan.

Typical Landscape Elements

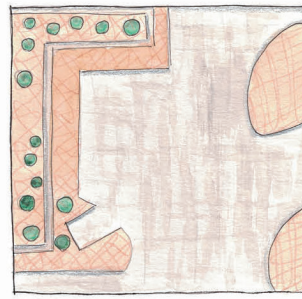
The four sample parks are composed of similar building blocks and materials (see Figure 4.2). All parks observed represent a planting matrix defined by turf, pavement, mulched planting beds, and trees. These four major elements define the arrangement of planted areas, but these parks also contain programmed areas, such as playgrounds, seating areas, picnic shelters, and outdoor furniture. Less common landscape elements found in the sample sites include gravel areas, outdoor sculptures, walls, bioswales, and paving stones. Another spontaneous landscape element that was found in three of the four parks is informal “social” trails where park visitors create paths through repeated travel.

Planted areas fell into three categories: turf, shrub beds, and trees. Turf areas cover the most ground across the parks (only one park, 12th Ave Square does not have turf). Planting beds are present in all four parks, but they are less extensive than turf. Turf areas tend to

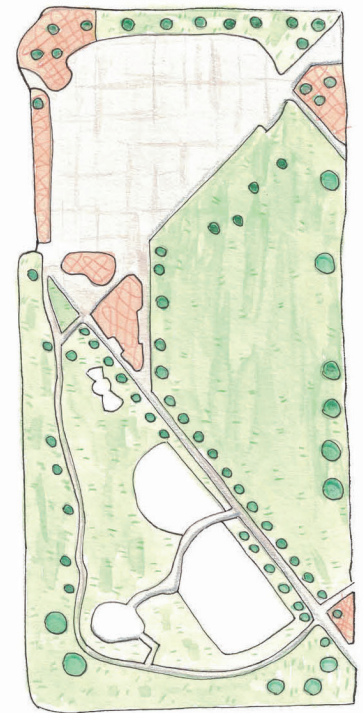
Hubbard Homestead



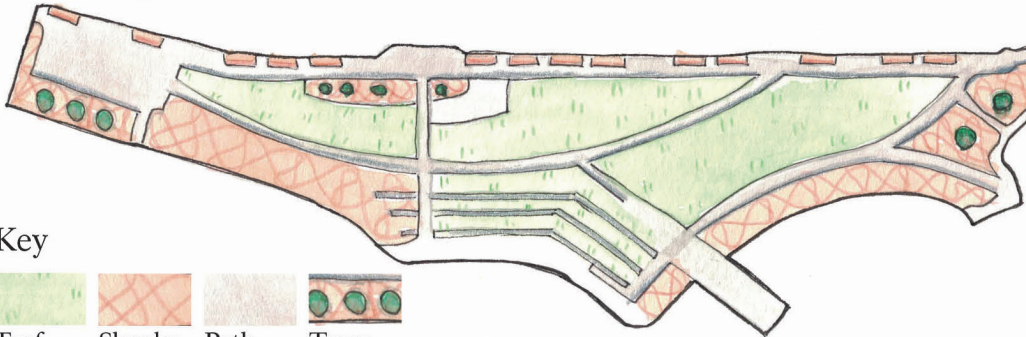
12th Ave Square



Benefit Playground



Fritz Hedges



Key

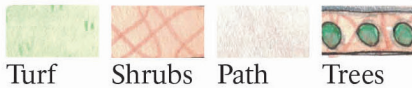


Figure 4.2 The typical landscape elements for the four sample sites. Image by author.

be contiguous and expansive; planting beds are smaller, more divided, and distributed. Trees show up in both turf areas and planting beds. Where they show up in turf, they are set apart by a ring of mulch around their base, and not accompanied by shrubs. Trees in planting beds are accompanied by shrubs.

Site visits yielded a number of observations related to plants. In general, plants (other than turf) tended to be deciduous. This was especially apparent since site visits were done in the winter when these plants are devoid of foliage. Some shrubs were evergreen. The difference between evergreen and deciduous plantings was also evident in the amount of bare ground exposed in planting beds, with deciduous-dominant plantings exhibiting more bare ground at the time of site observations. Another characteristic contributing to exposed ground in planting beds is sparse planting density. Of the sites observed, many had planting beds that were sparsely planted with patches of openings where no plants existed. Most planting beds did have an intact layer of arborist woodchips covering these areas of open ground. Other planting beds had a mix of decayed mulch and weedy growth in the open areas.

Typical Layout

The layout and arrangement of landscape elements follows a similar pattern across the four sites. This typical arrangement consists of a large open area in the middle (usually turf), with planting beds on the edges, with a

path network cutting through the middle of the park and/or circling around the edge of the park. Planting beds either tend to run in contiguous strips parallel to the edges of parks or exist as islands bordered by paths. A recently opened neighborhood park, Cheryl Chow Park exemplifies this typical layout (see Figure 4.3)

The path networks of these parks seem to create these small leftover zones that become planting beds. This is often a result of multiple access points and path options for these parks. Because these parks are situated next to sidewalks, residential streets, and busy thoroughfares, they tend to have multiple access points with multiple paths crisscrossing through them. These complex circulation networks are constrained to these natural access points, and the shrub beds fill in-between.

There were a few different common patterns in regard to the layout of trees across sites. Trees are often planted in straight rows, which is typical of trees along the edge of a park, or along the edge of pavement, such as the allée at Benefit Playground Park. Another typical form of tree planting is when trees are planted in singles, pairs, or clusters in turf. This type of planting is done organically and appears in turf areas of the three sample sites with turf.

The overall effect of these layout patterns is the fragmentation of planted areas, which can pose challenges for maintenance. The largest contiguous patches tend to be the central open areas, which are typically turf. Path networks

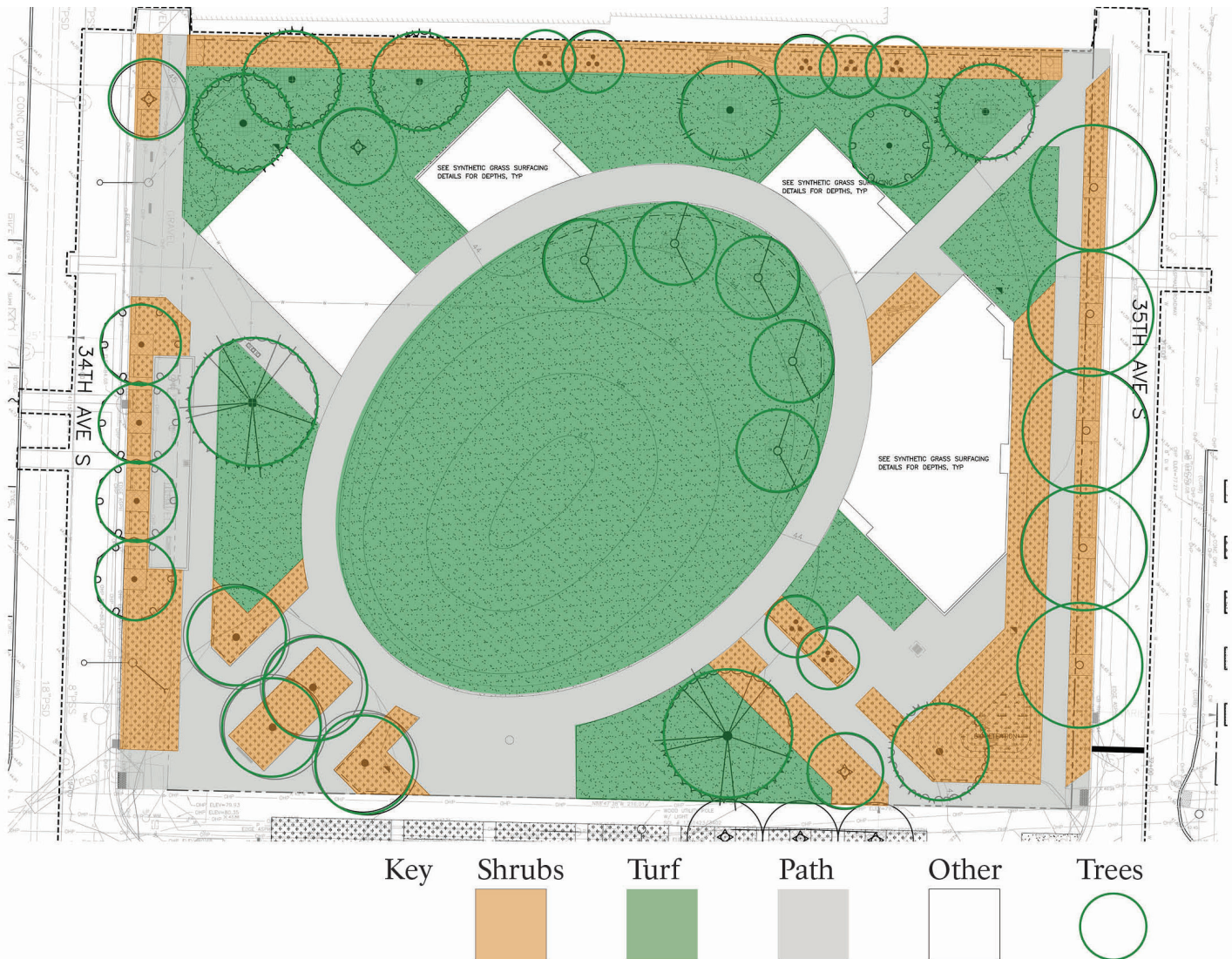


Figure 4.3 An annotated plan of Cheryl Chow park highlighting a typical layout. Source: City of Seattle, annotations by author.

crisscross and access the corners and edges of the parks. Planting beds are small, isolated, and typically hemmed in by pavement. This division of the space can result in some arbitrary design characteristics for these shrub beds that lead to maintenance challenges. The starkest example of this is where shrub beds become shaped into tight corners or narrow areas. This is usually the result of two paved areas intersecting. When these corners aren't rounded off, they create pinchpoints particularly in shrub beds. These pinchpoints were places where pedestrian traffic was evident, desirable plants had difficulty growing, and weeds were taking over. People tend to step into these areas as they walk by, and there is not enough space for desirable plants to grow.

Edges and Borders

Generally, the edges between different park elements were observed as crisp and clearly defined, especially when the edge was composed of pavement. The edges and borders that are less defined were typically

between turf and shrub beds. In these cases, the two plant typologies tended to blend at the edge unless there was some sort of physical barrier present (see Figure 4.4).

Most of the planting beds are virtually flat and on the same plan as adjacent materials. These planting beds are differentiated only by a material change rather than any sort of designed border such as a curb or low wall (see Figure 4.5). Most borders did not have a physical barrier, but when a physical barrier was present between planted elements, it took a few different forms. Concrete strips separated areas of turf at Hubbard Homestead. Thin steel edging material was observed at Fritz Hedges Park to separate the intended meadow area from adjacent turf and to separate a planting bed from turf. In both cases, turfgrass had grown over the steel edging material.

In some cases, planting beds are differentiated from adjacent surfaces by both a material transition and a topographical transition. These planted areas are



Figure 4.4 Turf encroaching on a shrub bed at Fritz Hedges Park. Photo by author.



Figure 4.6 A planting area contained by a concrete wall at 12th Ave Square Park. Image by author.



Figure 4.5 A shrub bed on the same plane as adjacent pavement at Benefit Playground. Photo by author.



Figure 4.7 Well maintained turf and pavement at 12th Ave Square Park. Photo by author.

inclined planes bordered by flat or less steep planes. In other words, these are planted slopes set apart from their surroundings due to their incline. A third form of planting bed that is present in the parks studied is a contained planting bed, bordered by low walls. Contained planting areas were less present but observed at Fritz Hedges Park and 12th Ave Square Park (see Figure 4.6).

Condition Assessments

There was a clear distinction between the condition of planted areas and other areas in these four parks. Turf, trees, hardscaping, and built elements were in good condition due to their static nature and durability of materials (see Figure 4.7). Turf was trimmed to a consistent low height and weed free. Paved areas were clean and free of damage. Mature trees appeared healthy and claimed their space. Planting beds, in contrast, displayed a range of conditions. Planting beds often appeared sparsely planted and had patches of weeds (see Figure 4.8).

Simplified Plantings

Many sites throughout the four parks had simple plant palettes. Planted areas tended to have a limited number of species, and in many cases just a single species. This trend proved true of small shrub areas and narrow planted strips in particular where space is limited. For example, a newly planted area at Benefit Playground is mostly composed of Mount Vernon laurel and *Nandina domestica* (see Figure 4.9). Some shrub beds, especially if they are larger, have a mix of trees and shrubs, but most of the smaller shrub beds just have shrubs. Of the areas observed for this study, most did not have groundcover plants. Instead, the ground was covered with arborist woodchips.

An analysis of original construction documents compared with site visit observations suggest that many planted areas have been simplified from their original designs (see Figure 4.10). When comparing contemporary site visits to autoethnographic reflections, these shifts can be identified. These changes occurred primarily



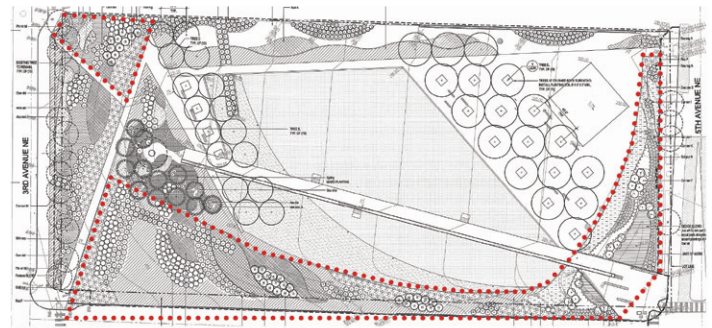
Figure 4.8 A sparsely planted shrub bed at Hubbard Homestead Park. Image by author.

at Hubbard Homestead and Fritz Hedges. At Hubbard Homestead, shrub plantings along the southern border, eastern border, and NW corner of the park have been removed. The planting strip on the southern border retains a row of trees, but the understory shrubs have been replaced by a mulched strip beneath the trees. The



Figure 4.9 A shrub bed at Benefit Playground Park with a simple planting plan. Image by author.

other areas where shrubs used to exist have been converted to turf. At Fritz Hedges, an area designed to be a meadow has been converted to turf, and the shoreline plantings have virtually all been removed. Interview participants explained why these changes occurred. At Hubbard Homestead, the shrub areas were reduced because they had become overgrown and were perceived to cause public safety concerns. They were also too extensive to maintain with the available maintenance resources. At Fritz Hedges the turf conversion of the meadow was in response to an overwhelming presence of invasive weeds. The shrub plantings along the shore did not survive the establishment phase and also succumbed to overwhelming invasive weed pressure.



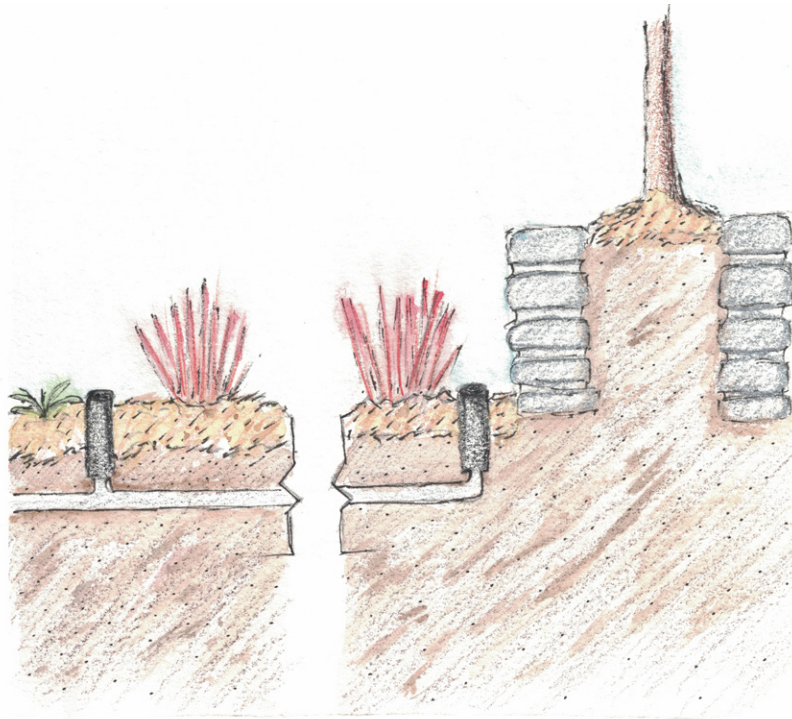
Hubbard Homestead original planting plan



Hubbard Homestead current planting areas

Figure 4.10 Planting plan simplified from the original design at Hubbard Homestead Park. Source: Mithun, Google Earth. Annotations by author.

Chapter 5: Recommendations and Guiding Principles



“Moving beyond wishful thinking and the reliance on consistent maintenance to keep a design in “proper condition” is an important and timely challenge for the landscape architect to address.” (Woodward, 2008, 98)

This chapter offers recommendations for designing with a maintenance mindset based on the results of this study. The recommendations are aimed at integrating maintenance considerations into the landscape design process. Recommendations are organized into two categories: Design Process Recommendations and Maintenance Design Guiding Principles. Design Process Recommendations explore areas of opportunity to create systemic change by increasing collaboration between landscape designers and landscape maintainers. The Maintenance Design Guiding Principles focus on formal design strategies for integrating maintenance considerations and calibrating designs to match maintenance constraints.

Design Process Recommendations

Design Process Recommendations include the following: consult maintenance workers early and often; focus on project handoff and establishment; integrate gardener's designs; and scale maintenance with new park acquisitions (see Figure 5.1)

1. Consult Maintenance Workers Early and Often

To better integrate maintenance considerations into landscape design, designers must engage maintenance workers in the design process. The results from autoethnography, interviews, and the literature review all highlight an insufficient amount of engagement between the two disciplines. At SPR, Proview is the primary way maintainers can engage with the design process, but this research reveals several issues with this process. For one, Proview is not open to everyone who will be maintaining the built project. Usually, managers and more senior employees give feedback, while laborers don't. Another common complaint is that feedback from maintainers

doesn't always get integrated and designers and other stakeholders have more of a say.

To remedy these gaps in collaboration, several new policies should be adopted. First, the maintenance workers who will be working at the site in question should be consulted before any design work is done. The Proview process provides a way to comment on an existing design proposal. As such, the most influence maintenance workers can have is to change or revise a design. Instead, maintenance workers should be brought in at the very start of a project to educate designers on the maintenance context for the new park. To ensure all relevant maintenance workers are consulted, there should be a requirement to have a representative from each labor class involved in the process, including a Crew Chief or Supervisor, Senior Gardener, Gardener, and Maintenance Laborer. Landscape designers and maintenance workers should be required to meet and walk the site together, so maintenance workers can describe their skills, preferences, and workloads. This walkthrough could also help identify existing materials to integrate into the design. Overall, this walkthrough will give designers an understanding of the available maintenance resources for the site. To ensure the continued collaboration between maintenance workers and designers, maintenance workers should be incentivized to participate in the Proview process by contractually allotting a certain amount of time to Proview. Maintenance workers expressed a lack of time to participate in Proview because they had more pressing tasks out in the field. If their contracts explicitly permitted time for Proview, it would free them to step away from field tasks more readily.

2. Focus on Project Handoff and Establishment

The handoff from designer to maintainer is a crucial part of the park establishment phase that does not get emphasized enough. Design practitioners and maintenance workers describe the current trend where the

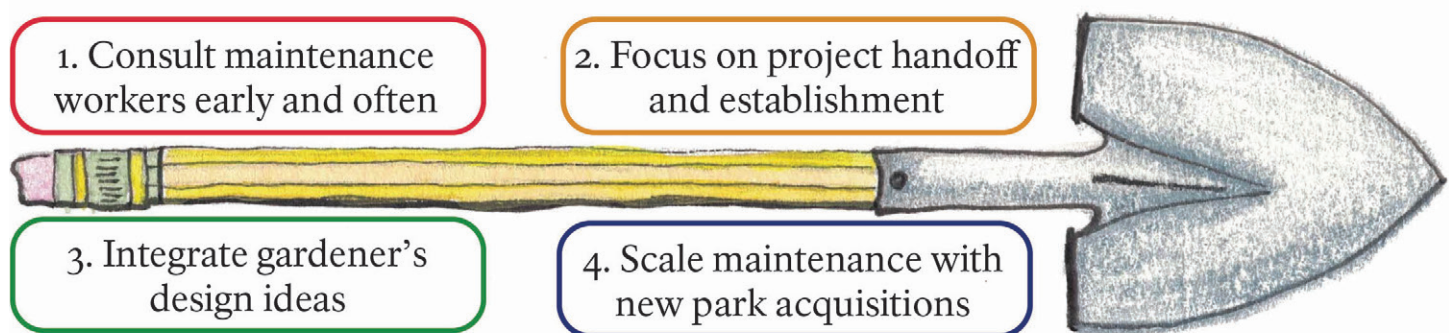


Figure 5.1 A summary of Design Process Recommendations. Image by author.

designer’s involvement in the project ends at the ribbon cutting. In this model, maintenance workers are handed a new site without much explanation or training to its unique characteristics. Interview participants expressed a desire for a more comprehensive handoff process where designers explain their intent and offer guidance on how the design should be maintained. This process should include a walkthrough of the completed site with landscape designers and the maintenance workers who will be caring for the site. During this walkthrough, the landscape designer should explain the formal design intent behind each planted area, emphasizing the ideal growth of plants. Plants should be identified along with a discussion of the best practices for watering, pruning, mulching, and any other relevant maintenance practices. During the walkthrough, maintenance workers will be able to voice concerns, ask questions, and offer suggestions.

This handoff should not be thought of as a one-time event, but should involve an ongoing, two-way dialogue between designers and maintainers as the site ages within the first five years. During this ongoing dialogue, designers should be available to offer guidance on any issues that arise, and maintainers can report their observations to designers. This ongoing engagement would ensure maintainers are upholding design intent, and allow designers to revise problematic elements based

on maintainer feedback. This cycle of feedback could be organized around a series of site walkthroughs set forth in the initial contract. These could be quarterly for the first year or two of a project, then taper off to twice a year through year five, as one example of a timeline. Increasing the collaboration between maintainers and designers throughout the design, construction, and maintenance phases of a project will lead to greater success (see Figure 5.2)

Other forms of ongoing communication should be included in the scope of work for landscape design firms. A maintenance manual should accompany each new project. The manual should include plant identification and associated best maintenance practices, as well as an explanation of the ideal form and layout of planted areas, including recommendations for responding to common disturbances such as weed encroachment, and plant die off. To address the shifting seasonal maintenance demands, firms could supplement this initial maintenance manual with a regular maintenance newsletter. The idea of a maintenance newsletter is inspired by Theodore Brickman Co.’s Landscape Maintenance Memo (Brickman 1982), which was sent out to clients to remind them of seasonal maintenance requirements, current insect and disease problems, and other maintenance related news. A newsletter is a great way for a firm to stay involved with the maintenance of a project after

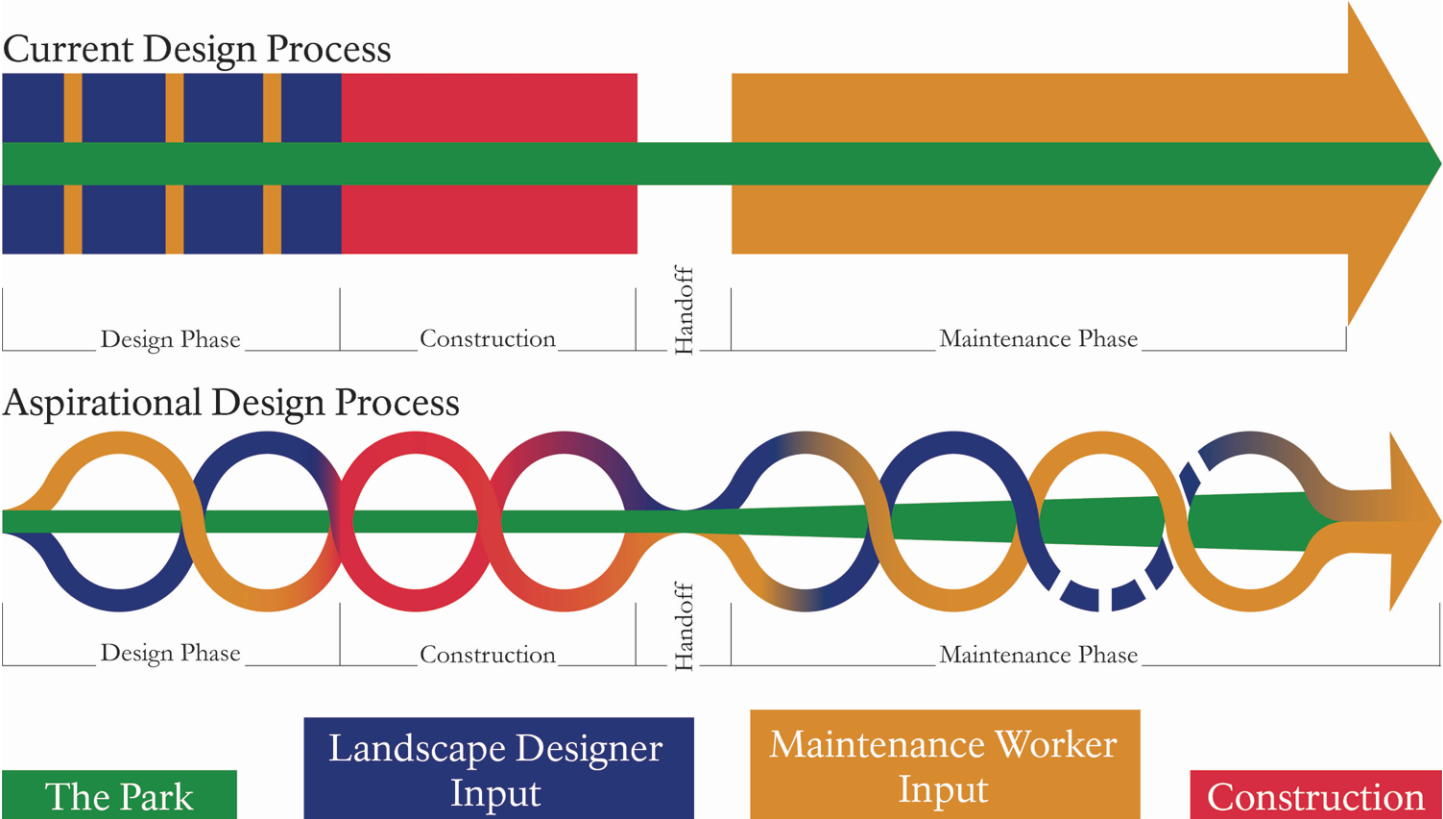


Figure 5.2 The current and proposed process of collaboration between maintenance workers and landscape designers. Image by author.

construction and continue to keep the dialogue open between designers and maintainers.

The long-term success of a newly built landscape design depends on the care it receives during the establishment phase, which would be improved by a more robust handoff process. Interview participants stressed the importance of plant establishment. They spoke about it being much easier to care for an established landscape through regular ongoing maintenance compared with an overhaul of a failed design. Established landscapes are resilient to disturbances like storms, weed pressure, and drought, while newly planted areas are more fragile and susceptible to damage and die-off. Integrating an emphasis on establishment into the design process means designers need to view landscape maintenance as a multifaceted approach to landscape management. Not all landscape maintenance is the same; establishing a new design requires more frequent maintenance visits, increased irrigation, monitoring, weeding, and nimble revisions when design elements fail. This intensive maintenance equates to more staff hours and the horticultural know-how to ensure success.

By focusing on this establishment phase, landscape designers could shift their goal from delivering a finished product to delivering a starting point that will continue to be refined. The current trend is to specify design elements for all areas of a park, plant densely, then perpetuate these elements through maintenance. However, a focus on successful establishment could mean rolling out a design in phases instead of all at once. A planting plan could be piloted in one area of the park and monitored to see how viable it is for maintainers. It could then be revised and duplicated in other areas of the park. A phased approach like this would be scaled to maintenance constraints so one area would get established well enough to require less frequent maintenance before moving on to the next.

3. Integrate Gardener's Designs

Gardeners and maintenance workers should each lead certain aspects of a new park design. As Raxworthy (2018) notes, both landscape designers and gardeners deploy design judgment as part of their work. The line separating designers from gardeners is arbitrary. When the profession of landscape architecture originated,

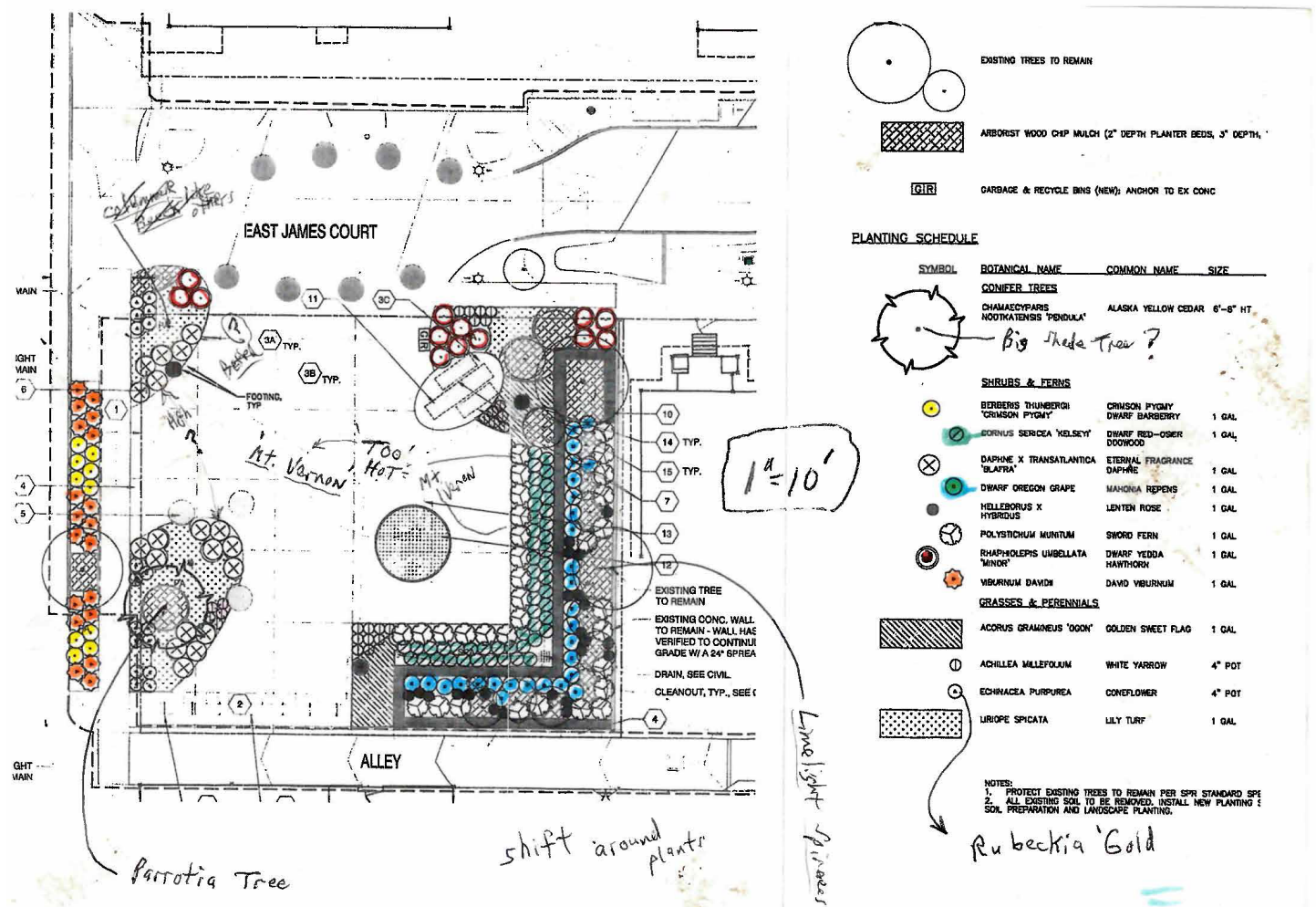


Figure 5.3 A planting plan for 12th Ave Square Park annotated by SPR gardeners. Source: City of Seattle.

some practitioners referred to themselves as “landscape gardeners” and the people designing, building, and maintaining were often the same. This same spirit exists in the design-build business model that continues in the landscape architecture profession today.

SPR gardeners already engage in landscape design activities as part of their work. At SPR, since any project site under 1,000 square feet can be altered without the requirement of Proview approval, it would not be too big a leap to set up a policy framework that can encourage the empowerment of maintenance workers to do design work. Interview participants described examples of collaboration between maintenance workers and in-house landscape architects for projects of this size. Maintenance workers said they get enjoyment out of doing design, and they are more invested in the care and success of the landscape, because they had a say in its design.

To improve the current design process, maintenance workers and gardeners could be consulted to do the planting design for new projects. Planting plans from external landscape designers were identified as the number one category of design that contributes to maintenance issues. In some cases Senior Gardeners come up with new planting plans for areas that did not initially

succeed, as happened at 12th Ave Square (See Figure 5.3) Gardeners expressed a desire to pick the plants, and specify planting densities for the planting beds they would be caring for. One version of this strategy would be to expand the responsibilities of Senior Gardeners to include plant selection for new projects (adjusting their contracts and increasing their compensation in the process). This would mean making a senior gardener the lead on plant selection. They would still consult with landscape designers, but ultimately they would have the final say. A second version of this strategy would be to set aside a certain percentage of planted areas for Gardener-led designs. In this model, landscape designers would specify the majority of planted areas, leaving some spaces available for gardeners to take ownership of.

4. Scale Maintenance with New Park Acquisitions

A recurring topic of frustration for maintenance workers is the lack of additional maintenance resources for new parks. Maintenance workers described new parks being added to their already full list of park assignments without new staff or resources (see Figure 5.4). While



Figure 5.4 The ratio (approx. 2:65) of Senior Gardeners to parks in the NE maintenance district. Image by author.

this issue is inextricably tied to political priorities and economic limitations, it is still important to address. In Hubbard Homestead and Fritz Hedges Park, for example, the lack of additional maintenance resources was cited as a reason for the failure of planting beds. Interview participants did share some rare examples where new parks came with new maintenance positions. In those cases, the establishment of new designs was more successful.

Staffing levels can be increased for new parks through a few different strategies. The first strategy would be to simply hire more Gardeners and Senior Gardeners across SPR. Even adding one more Senior Gardener to each district would improve the overall ratio of Gardeners to parks. This improved ratio would make districts more resilient to new park acquisitions. Another strategy would be to hire new staff as new parks come on line. In this model, a district would only get new gardening staff when they get a new park, scaling maintenance resources in a targeted fashion. A third strategy could be to hire new Gardeners in order to transfer existing Senior Gardeners to oversee the establishment of the new park. This hire and transfer approach would ensure the new park gets the devoted, skilled maintenance it needs without taking maintenance resources away from other parks. In all of these models, the increase in gardening staff should be carried out so a Senior Gardener can focus their work on the establishment of the new park. New parks don't just need more maintenance resources, they need devoted maintenance resources, especially during

the first 3-5 years. A targeted increase in staffing could accomplish this.

Scaling maintenance with new park acquisitions also means scaling horticultural knowledge and skills to the new park. Interview participants highlighted an incompatibility between certain designs and the existing skill level of maintenance workers. To counteract this, the budget calculations for new park acquisitions should include training the maintenance staff that will be caring for the new park. The targeted hiring strategy discussed in the previous paragraph addresses the short-term maintenance of a new park, but the turnover of maintenance staff could lead to the one person with the knowledge to care for the new park leaving the district. Training multiple staff in the district would build in a level of resiliency to the institutional knowledge required to care for the new park. Overall, scaling park maintenance with new acquisitions comes down to increasing the number of horticulturally-skilled staff who are able to care for the new park.

Maintenance Design Guiding Principles

The Maintenance Design Guiding Principles include the following: design with constraints and parameters; strategically divide maintenance space; collaborate with disturbances; engage with edges; and balance persistent features and flexible features (see Figure 5.5).

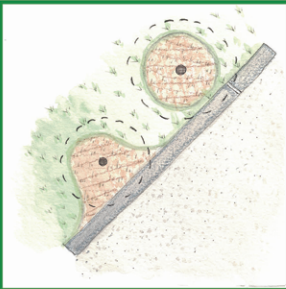
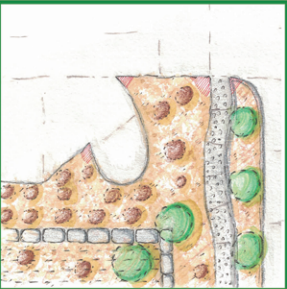
				
1. Design with constraints and parameters	2. Strategically divide maintenance space	3. Collaborate with disturbances	4. Engage with edges	5. Balance persistent features with flexible features
- Start with tools - Use existing materials - Derive forms from access and infrastructure - Match maintenance resources	- Consolidate plants - Use soft-surface trails - Avoid pinchpoints in planting beds - De-turfing patterns	- Damage becomes design - Humans and non-humans as maintenance agents - Plant failure becomes formal inspiration	- Build up/soften edges - Shaped to match adjacent materials - Fewer fragmented edges around plants	- Add durable structure to planting beds - Phase plant establishment - Evergreens vs. deciduous - Planned decay

Figure 5.5 A summary of the Maintenance Design Guiding Principles. Image by author.

1. Design with Constraints and Parameters

Landscape designs for small to medium developed parks in Seattle should be calibrated to the existing maintenance constraints. These constraints include staffing levels, limited available maintenance hours, maintenance schedule, limited natural resource availability, upkeep of irrigation systems, equipment and tool availability. These constraints should be used to set the initial scope of a design to ensure its ability to be maintained after construction. For vegetated areas, these constraints will dictate the overall area devoted to planting beds vs. turf, and what species should be selected. Constraints should be used to establish the overall composition of park elements.

In conjunction with constraints, other parameters should also be used to calibrate formal designs to maintenance realities. In a maintenance design paradigm, parameters should be derived from tool and equipment specifications, access requirements, irrigation patterns, and material qualities and shapes. These maintenance design parameters have exciting implications for design because some parameters are static while others are mobile. A landscape designer could simultaneously engage with the parameters inherent in a standard tree planting detail (a static element), and the parameters inherent in the operation of a lawn mower (a mobile element). An overlay of these two parameters could yield various patterns to optimize both tree placement and mowing efficiency.

Designing with constraints and parameters results in a tangible overlap between landscape design and maintenance operations. Mapping maintenance parameters onto a site physicalizes the theoretical framing of a maintenance design paradigm because both design and maintenance involve a negotiation of physical space. Landscape maintenance operations are carried out based on predictable patterns. As such, they are translatable to landscape design. An engagement with maintenance parameters ensures a harmonious relationship between a design and the maintenance operations enacted upon it—and a harmonious relationship between designer and maintainer.

2. Strategically Divide Maintenance Space

Designing with a maintenance mindset means arranging zones of maintenance space strategically.

The planting areas in small to medium neighborhood parks tend to be fragmented due to a complex matrix of programming, paths, and turf. These complex and fragmented layouts create an abundance of edge conditions where two typologies abut one another. Edges and material transitions create boundaries that require higher levels of maintenance to keep intact, and certain juxtapositions are more difficult to maintain than others. Additionally, this fragmentation can create planting beds that make it harder for plants to survive. Smaller planting beds can get crowded with plants easier, dry out more quickly, and are more susceptible to disturbances around their perimeters. The shape of planting beds also contributes to difficulties in plant establishment, especially where the planting beds come to pinch points, or intersect with social trails where people walk and trample desired vegetation.

The first design strategy to improve the layout of maintenance zones is to intentionally balance contiguous and fragmented space. Increasing connectivity for fragmented shrub beds will increase permeability, water retention, and nutrient availability, and decrease edges, thereby decreasing susceptibility to disturbances. Paths are the most common landscape element to bisect planting areas, so optimizing connectivity will mean strategic design of circulation networks.

Turf is not as sensitive to the size and shape of the container it's growing in, so fragmenting turf areas will not lead to die-off in the same way it will for planting beds. This means that large expansive turf areas can be fragmented to add biodiversity without compromising the remaining turf. A current tactic at SPR is to plant trees in turf areas. This is a beneficial strategy for increasing biodiversity, carbon sequestration, shade, and structural complexity, without compromising the health of the turf. Another strategy for fragmenting turf is to add patches of meadow species or low-mow turf. These typologies are functionally similar to turf, so they can be integrated with relative ease. These and other “de-turfing” strategies should be integrated into designs to increase the ecological benefits of passive turf areas without adding to the overall maintenance load.¹

A strategic division of space should also be applied to subdivide larger, connected shrub beds. A large area of turf can be maintained in a few hours by a single person

¹ Meadow-like patches still require maintenance, and can be composed of a myriad of plant combinations with different maintenance requirements. In general they require less frequent mowing compared to turfgrass. Their success is largely dependent on a robust establishment phase and continued monitoring for weed encroachment.

operating a riding lawn mower, but the maintenance of a shrub bed is more meticulous and slower, especially if it is a large shrub bed. By subdividing a large shrub bed into distinct zones, delineated by logs for example, a crew can phase their maintenance operations. Ideally, this subdivision would include formal elements that are not plants such as logs, soft-surface trails, rustic gathering areas, public art, and intentional voids. Mixing plants with these non-plant elements will lead to more interesting designs, increase access points for maintainers, ensure clear sight lines, and add definition and clarity to the space. Most importantly, this strategy will increase the connectivity and permeability of the planting bed without an increase in vegetation maintenance, increasing the resilience of the plantings in the process.

3. Collaborate with Disturbances

A maintenance design mindset provides a framework for working with disturbances such as storms, park users, wildlife, and plant mortality rather than against them. In a typical maintenance paradigm, a disturbance is viewed as something that needs to be reversed; that is, the design needs to be put back the way it was. This framing reinforces the primacy of the design, relegating maintenance to the role of rigidly upholding the formal prescription for the site. Maintenance operations that react to disturbance can be costly and laborious compared with ongoing proactive maintenance activities.

To reduce the overall strain on maintainers, these disturbances should be seen as catalysts for design revisions, sparking new ideas that respond supportively to a disturbed area. Take, for example, the common occurrence of a mature tree falling. This happens hundreds of times a year in Seattle's parks. In most cases, especially in developed parks,



Figure 5.6 A fallen log could be integrated into a park design. Photo by author.



Figure 5.7 Turf damaged by animals digging for the European chafer beetle. Image by author.

these trees are removed from the park. It takes a substantial amount of energy and resources to cut the tree into sections that are then loaded by heavy equipment into a large dump truck to be hauled off site. In contrast, collaborating with this disturbance would mean leaving the tree where it falls and designing around it to thoughtfully integrate it into the site (see Figure 5.6). This approach could also lead to environmental education opportunities about the establishment of a nurse log for park visitors.

Wildlife can also disturb intended designs as is the case with crows and raccoons tearing up turf across Seattle. The European Chafer Beetle was introduced to Seattle in 2008. It lays its eggs just below the surface in dry turf. When the eggs reach the larval stage, crows and raccoons tear up the turf to eat the larvae, resulting in a prevalence of damaged turf areas (see Figure 5.7). The old maintenance paradigm would advise controlling these infestations through integrated pest management, then reseeding the turf and keeping it irrigated, since the European chafer prefers dry turf. To collaboratively design with this disturbance would mean delineating the damaged turf area as a space to introduce a novel typology—for example, converting the disturbed area of turf into a meadow, rather than reseeding it with turfgrass. This very approach was described by one of the maintenance workers interviewed as a viable alternative. Similar approaches can be applied to other types of disturbance as well.

4. Engage with Edges

The edges and boundaries between different landscape areas of parks should be strategically considered when designing with a maintenance mindset. Edges were referenced in the literature and interviews as an important aspect of successful park design. Nassauer (1995) makes

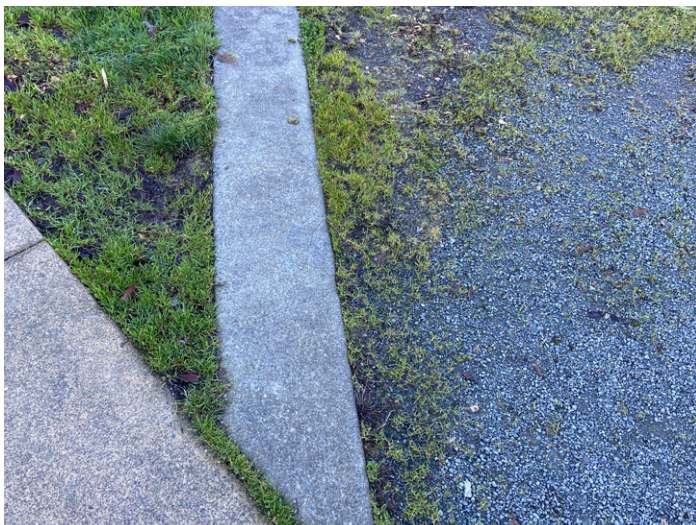


Figure 5.8 A mosaic of edges and material transitions at Hubbard Homestead Park. Image by author.

the case that clear and intentional edges contribute to public perception that a space is being cared for (see Figure 5.8). Interview participants reinforced the need for intentional edges not only for similar aesthetic reasons, but also to reduce maintenance by preventing encroachment. Edges can be bolstered by material barriers such as low walls, concrete mow strips, or logs. Regardless of the structure of the edge, it should not inhibit or increase maintenance operations.

Another important consideration to the intentional arrangement of maintenance space is identifying which vegetated zones should be placed next to one another. Each of the main landscape typologies present in small to medium neighborhood parks (turf, shrubs, trees, paths) is maintained in a different way. Each typology also holds its own space and encroaches into other spaces in a different way. When these differing characteristics are placed next to one another, they will either coexist harmoniously or not. Turf will encroach into shrub beds and tree mulch rings without a barrier of some sort, for example. An awareness of these different juxtapositions and intentional deployment of them will lessen the maintenance load of a design.

In sum, an engagement with edges is another opportunity to integrate traditional landscape design principles with maintenance design principles. The zone of transition between materials can be designed based on any number of formal principles as long as it supports an intentional maintenance strategy. Edges can be aesthetically crisp and straight, or curved and fuzzy. They can be armored and architectural or soft and porous. Applying these types of design logic to edge conditions can ease maintenance loads while increasing aesthetic interest and positive public perception.

5. Balance Persistent Features with Flexible Features

Park designs aimed at integrating maintenance considerations must acknowledge the dynamic nature of landscapes while also creating structural elements that will endure through time. Woodward (2008) discusses the importance of “persistent features” (e.g. rocks, swales, established trees) that will stick around when landscapes are “released from maintenance.” (102, 98). The “release” may result from budget cuts, a natural disaster, or another disturbance. Interview participants spoke to the reality that many landscapes see infrequent maintenance due to heavy workloads and competing priorities. They also mentioned other instances where maintenance infrastructure like irrigation goes offline, and staffing levels fluctuate. The ideal maintenance schedule would be frequent and comprehensive, but the reality is landscapes do go through unmaintained periods.

Landscapes shift and change for many other reasons other than a “release from maintenance.” Sometimes public opinion changes and new trends spring up (consider the spike in interest in Pickleball, which saw tennis courts converted and new pickleball courts added to parks). When it comes to planted areas, designers should plan for change while anchoring spaces with persistent elements that are meant to endure. These persistent elements can be structural like logs, stones, walls, and public art. These enduring elements can also be plants, such as evergreen shrubs and trees (see Figure 5.9).

Flexible features are also important because of the dynamic nature of ecologically rich landscapes and the increased disturbances coming as a result of climate



Figure 5.9 The stone path and fountain are persistent features in the midst of a shrub bed with encroaching turf at Hubbard Homestead Park. Image by author.

change. Flexible elements could be planting plans that leave space for climate adapted plants in the future or structural elements designed for disassembly and repurposing for future needs, such as a dry stack stone wall that could be constructed during the establishment phase then disassembled and rebuilt at a new site. This approach of balancing persistent features with flexible ones means designing a sturdy container whose contents can be redesigned and transformed.

Chapter 6: Application of Maintenance Design Principles



“Maintenance design allows landscape architects to engage the medium in a fundamentally different way, opening new opportunities for the profession—particularly in the territories of novel ecology, design activism, and landscape infrastructure.”

(Geffel, 2020, 2)

This chapter aims to apply the Maintenance Design Guiding Principles discussed in Chapter 5 to real world situations. The design ideas presented in this chapter are based on the findings from the preceding research. The following design ideas are situated in the four parks used for the sample site analysis research method (see Chapter 3), with one proposed design intervention for each park. The proposed designs are intended to identify typical landscape elements found throughout SPR neighborhood parks, and to offer a framework for approaching a maintenance design for that typical element, as such they are intentionally diagrammatic. Each intervention is also discussed in terms of its relation to the Maintenance Design Guiding Principles. It is important to conclude this project with tangible examples of these guiding principles to show how a city-specific maintenance design paradigm can benefit Seattle's parks.

The following design interventions are calibrated to be small shifts in design and maintenance that could be easily deployed throughout the city. By keeping the designs at this scale, in-house landscape architects, maintenance managers, and maintenance workers can collaborate fluidly and quickly to make decisions and get work done. And because the interventions are developed for typical conditions, they can be applied broadly while being scaled up or down to fit specific site requirements. These design strategies are presented as design renovations of existing parks, but the same guiding principles can also be applied to new park design.

Hubbard Homestead Park Interventions

The maintenance-informed design idea proposed for Hubbard Homestead focuses on three issues that have troubled the park for some time: remedying the fragmentation of planting beds, reducing vulnerable edge conditions for planting beds, and designing with desired human travel paths. The intervention area is in the northwest corner of the site where four paved paths converge and intersect (see Figure 6.1). Planting beds fill the spaces between this circulation network, resulting in a small isolated triangular planting bed and a larger planting bed. At its core, this design strategy shows how to connect fragmented planting beds to increase permeable surfaces and reduce vulnerable edge conditions while avoiding an increase in overall maintenance and a disruption to the circulation network (see Figure 6.2).

The primary strategy used to connect these two fragmented planting beds without increasing the overall maintenance load is to combine them while still allowing for human circulation. This strategy is broken into two distinct designs (see Figure 6.3): design 1 entails adding two soft surface paths, and design 2 involves adding an open gathering area in the middle of the shrub bed. Combining them equates to an increase in permeable surface and fewer vulnerable edges which gives the plants a better environment to grow in. The addition of a soft-surface path or gathering area adds a new type



Figure 6.1 The site of proposed design interventions at 12th Ave Square Park. Image by author.

Existing

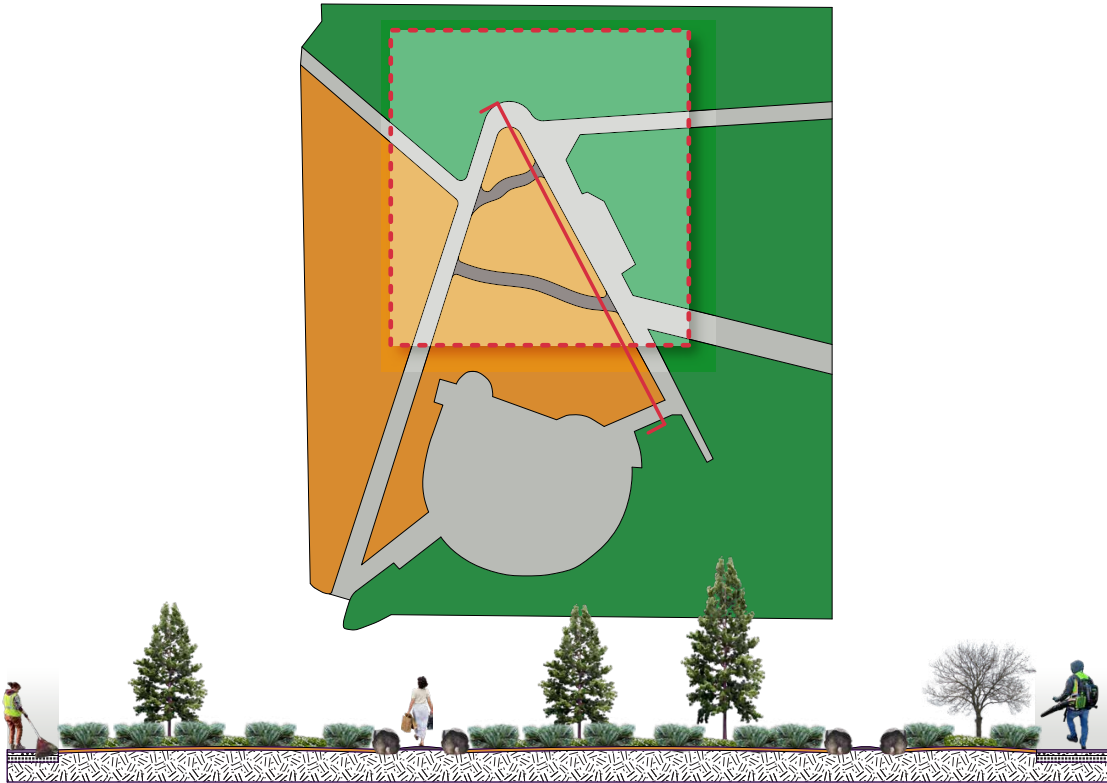


Proposed



Figure 6.2 Existing and proposed conditions for the fragmented shrub beds. Image by author.

Design 1



Design 2

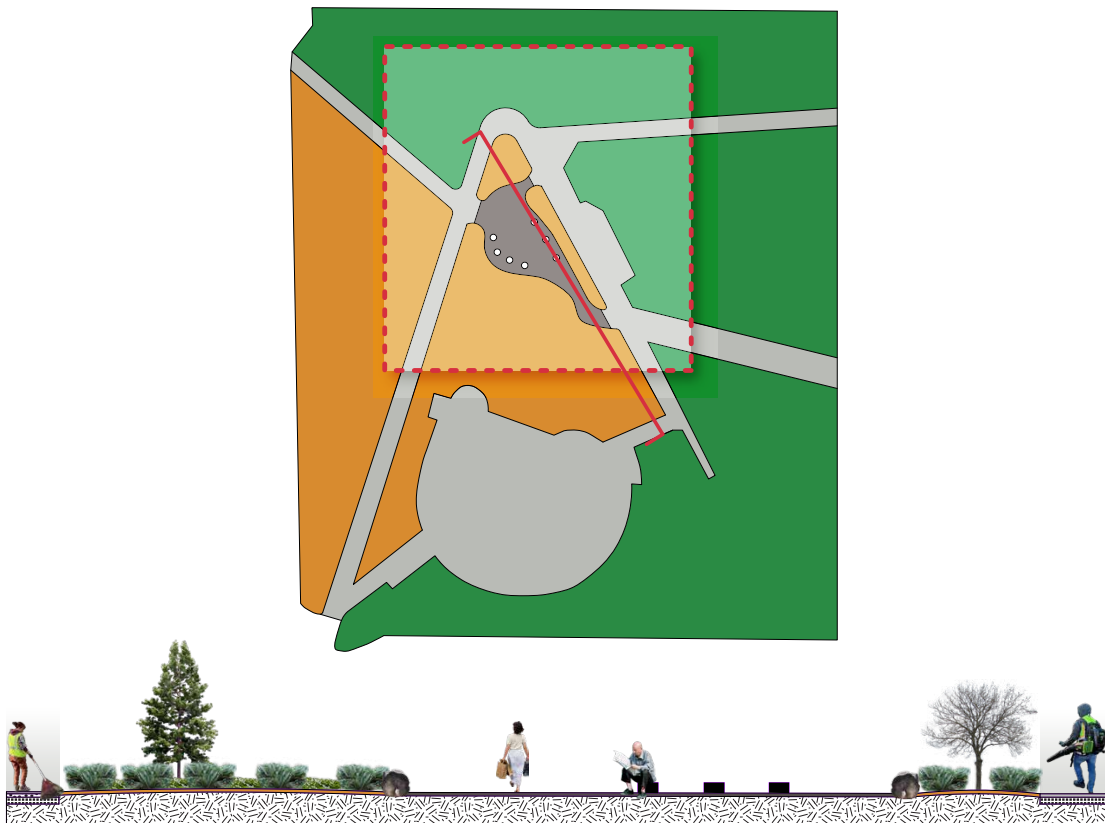


Figure 6.3 The two proposed designs to reconnect the fragmented shrub beds. Image by author.

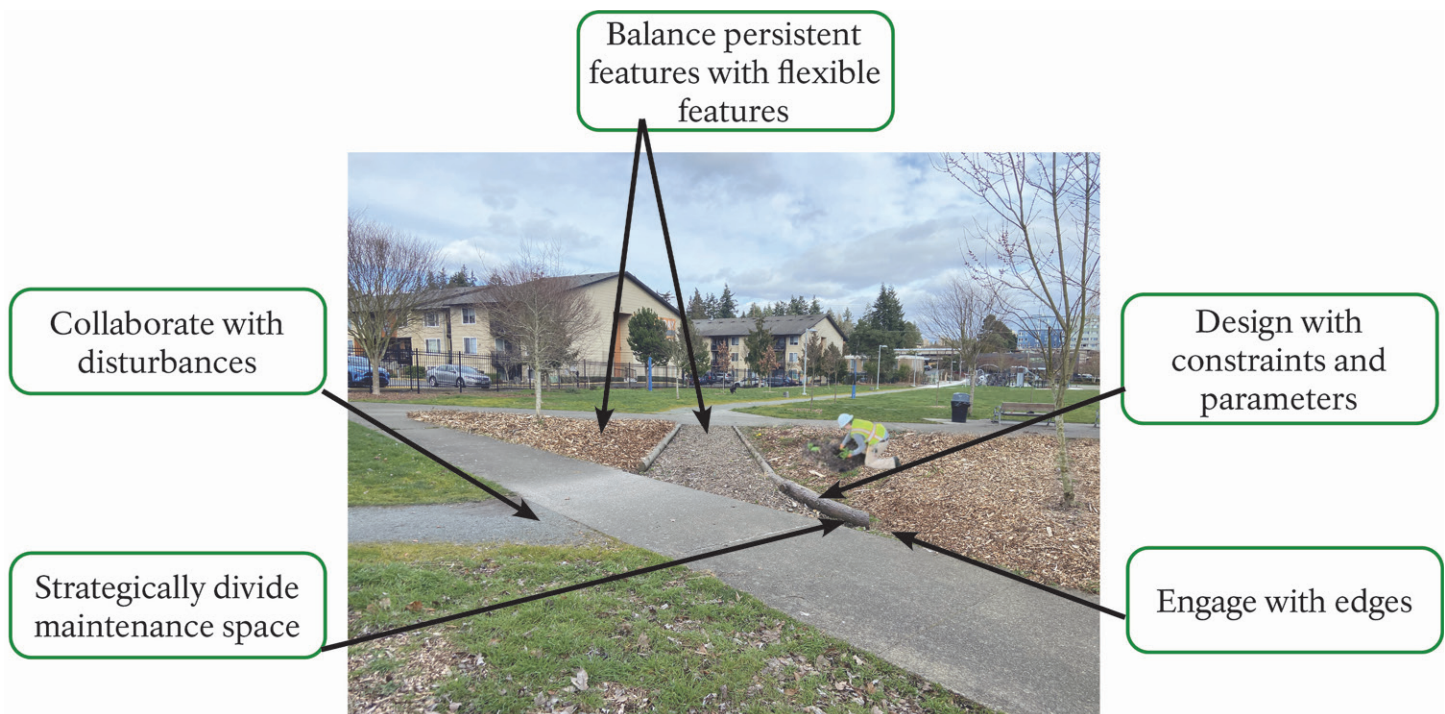


Figure 6.4 Demonstrating where the Maintenance Design Guiding Principles are applied at Hubbard Homestead Park. Image by author.

of space that will stay weed-free from repeated human movement acting as a weed-suppressant.

These proposed designs use the Maintenance Design Guiding Principles (see Figure 6.4) in several ways: they are designed with constraints and parameters, strategically divide maintenance space, collaborate with disturbances, and engage with edges.

Design with Constraints and Parameters

Design 1 and design 2 for Hubbard Homestead both engage with the constraint of limited horticultural staff at SPR. It is difficult for shrub beds in particular to get the necessary maintenance attention needed, so any design intervention for these areas should not increase the overall maintenance load. Rather than adding more plants and increasing the overall amount of planted area, this design focuses on improving the habitat for the plants that currently exist. The design increases the footprint of the planting bed (see Figure 6.2), but introduces intentional gaps in the plantings to reduce the amount of vegetation maintenance.

Strategically Divide Maintenance Space

Both design 1 and design 2 consist of two phases. The first phase of this design is to establish an improved arrangement of surface conditions. This is done by consolidating the fragmented planting beds into one contiguous area (see Figure 6.2). The next phase of this guiding principle is to subdivide the planting area into distinct zones (see Figure 6.3). This is accomplished

in both design options by creating intentional gaps in the planting area. These gaps (a soft-surface path or gathering area) are designed to invite human movement. This subdivision of the planting area adds sight lines, improves maintenance access to the interior of the planting bed, and adds a legible form to communicate care to the public.

Collaborate with Disturbances

In the proposed strategy, the paths of desired human movement are taken into account. These “social trails” are traditionally seen as disrupting a design. In this particular case, the pavement area separating the two fragmented planting beds is situated to anticipate a desired path of travel. Combining these two planting areas would eliminate this travel corridor, likely resulting in people walking through the middle of the newly connected planting area. Predicting social trails and integrating them into design enables such paths to be viewed and treated as opportunities for design, rather than something to discourage.

Engage with Edges

Connecting two fragmented planting beds increases interior space and reduces vulnerable edges. This means the plants in the middle will have a better chance of surviving because they are buffered from weed seeds blowing in from the edges and mechanical damage from pedestrians cutting corners. An engagement with edges also shows up in the proposed soft-surface path

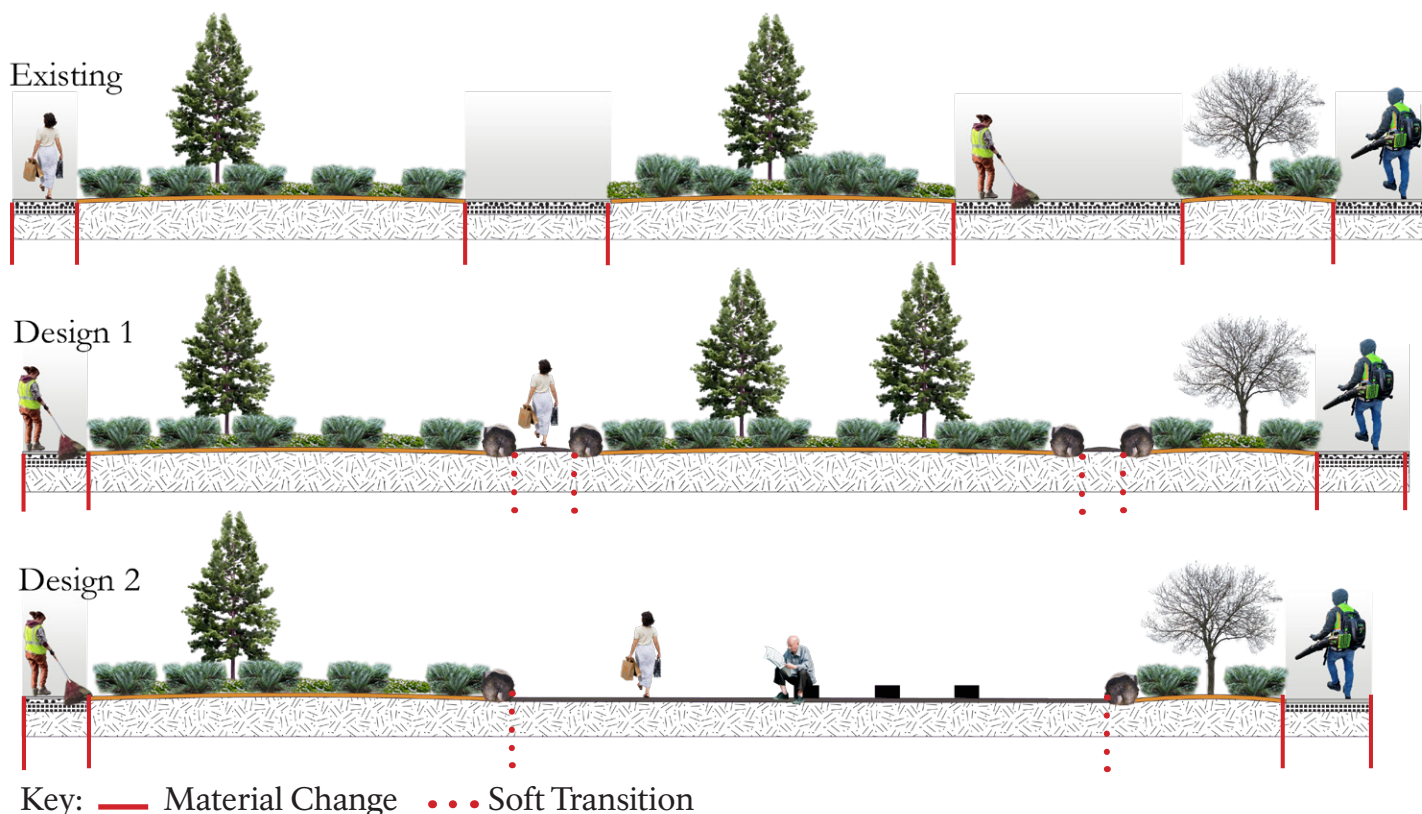


Figure 6.5 A comparison of material transitions for the existing site and two proposed designs. Image by author.

which is lined with logs. This simple edging material keeps the mulch of the planting areas and the gravel of the path separated, and also adds a visual cue to the public that the trail is an intentional feature (see Figure 6.5).

Fritz Hedges Park Interventions

The design for Fritz Hedges Park is intended to show a strategy for designing with existing parameters to establish new plantings in a site that is especially challenging because it is an expansive shrub bed located on a slope (see Figure 6.6).

Previous attempts to establish plants here have failed. This proposed design engages with the existing maintenance infrastructure, available natural resources, and patterns of disturbance to generate a formal pattern for plant establishment delineated by logs (see Figure 6.7).

These proposed designs use the Maintenance Design Guiding Principles (see Figure 6.8) in several ways: they are designed with constraints and parameters, strategically divide maintenance space, collaborate with disturbances, and balance persistent features with flexible features.

Design with Constraints and Parameters

The main constraint integrated into this design is the limited availability of horticultural maintenance

staff at SPR. To maintain such a large planting area overwhelms an already overloaded staff, so this design is intended to set up a system that maximizes maintenance inputs. The formal aspects of the design are derived from parameters which include existing slopes, irrigation sprinkler locations, social trail locations, availability of arborist woodchips, availability of logs. This approach starts with measurements of these parameters: distance of throw for sprinklers, location of social trails, size and shape of logs. These measurements can then be used to layout the design (see Figure 6.9).

Strategically Divide Maintenance Space

A primary motivator for this design is to subdivide an expansive planting area in order to concentrate resources. Logs are placed on the slope to create distinct planting zones (see Figure 6.10). Each zone is centered around a sprinkler head. By structurally delineating these zones along a slope, the logs can retain the mulch and water, which would otherwise shed off the slope. The retention of mulch and water equates to increased efficiency of irrigation and increased weed suppression, which are both critical for successful plant establishment and have been challenges on this site. This division of space also helps maintenance crews phase and concentrate their efforts.



Figure 6.6 The site of proposed design interventions at Fritz Hedges Park. Source: Google Earth.



Figure 6.7 The complete, proposed design for Fritz Hedges Park. Image by author.

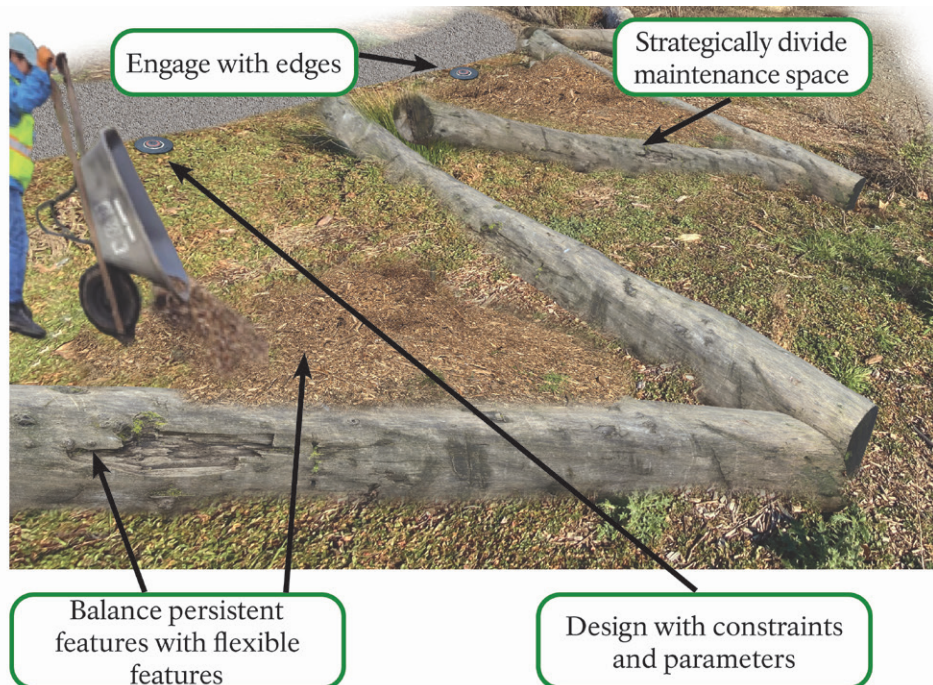


Figure 6.8 Demonstrating where the Maintenance Design Guiding Principles are applied at Fritz Hedges Park. Image by author.

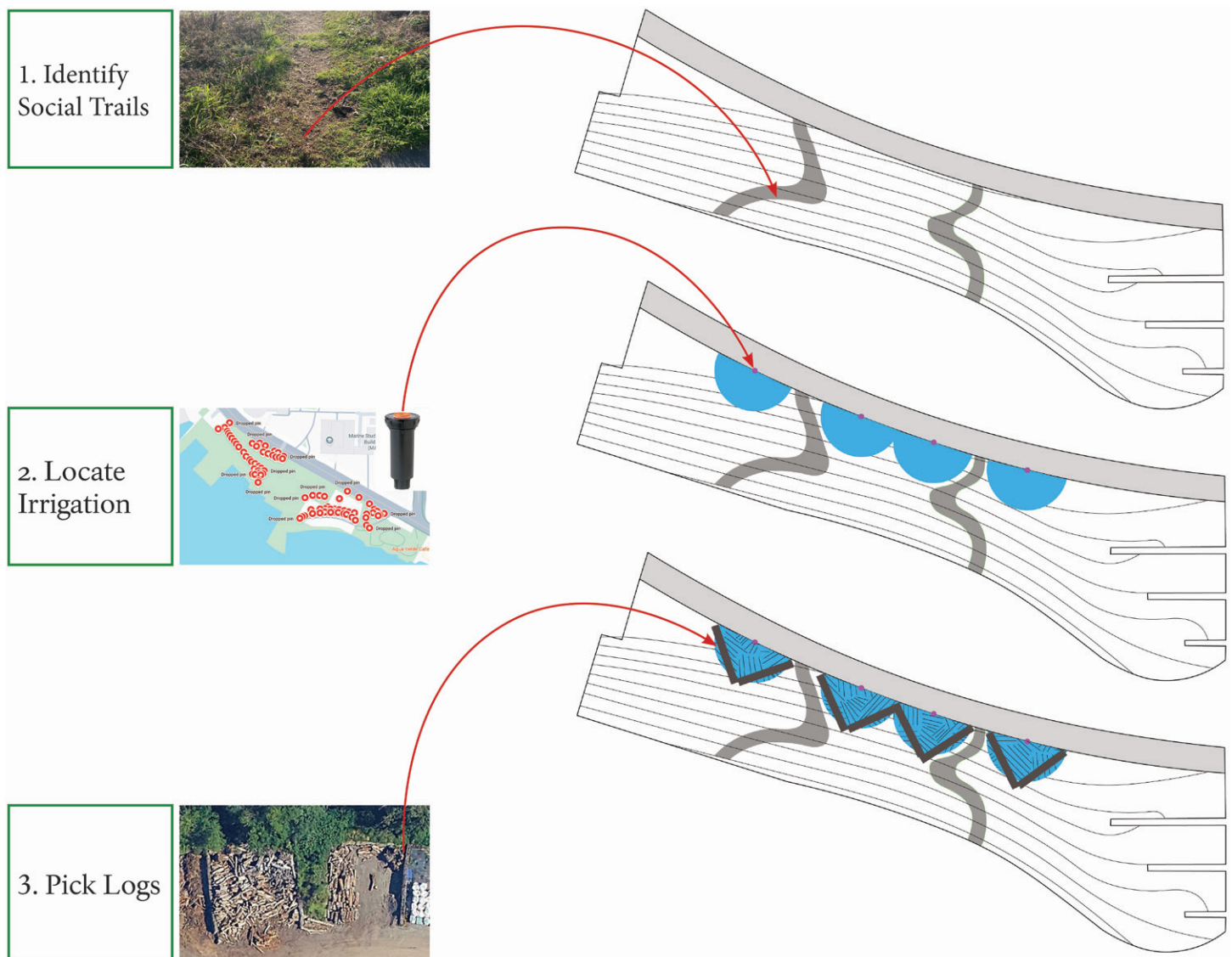


Figure 6.9 Layering maintenance parameters. Sources: Google Maps, Wikimedia Commons. Design by author.



Figure 6.10 Logs are used to divide the planted area. Image by author.

Collaborate with Disturbances

This site features several instances of social trails winding from the main paved path down to the water, through the planting area. Two of these social trails are integrated into the design to inform where the gaps between logs should be located (see Figure 6.9). The legitimization of these paths also creates areas in the planting bed that are void of plants, reducing the overall load of vegetation maintenance on the site. Paths are kept weed free from repeated movement by humans, so they are relatively low maintenance.

Balance Persistent Features with Flexible Features

In a site that has already experienced significant fluctuations in plant survival, maintenance resources, irrigation, and weed pressure, it's important to include anchoring elements to the design in tandem with areas that can be adapted to future needs. The delineation of planting areas with logs achieves both goals. The logs are persistent features, which anchor the planting area and signal design intent and care to the public. The zones defined by the logs are flexible features because the plants within can be altered and revised based on future needs.

12th Ave. Square Park Interventions

The proposed design interventions at this site focuses on the isolated planting beds at 12th Ave Square Park (see Figure 6.11) The three design options I propose for this type of planting bed (see Figure 6.12) explore ways to optimize the contents of small, isolated planting beds in general. This type of planting bed operates like an island in a sea of concrete, posing specific challenges for plant survival. The proposed designs look at ways to ameliorate some of those challenges when these fragmented areas can't be combined. The design strategies focus on edge conditions combined with plant selection strategies. In this situation, plants are selected for functionality and maintainability based on their structural characteristics.

These proposed designs use the Maintenance Design Guiding Principles (see Figure 6.13) in several ways: they are designed with constraints and parameters, strategically divide maintenance space, engage with edges, and balance persistent features with flexible features.

Design with Constraints and Parameters

The limited availability of horticultural maintenance staff is one of the main constraints driving these



Figure 6.11 The site of proposed design interventions at 12th Ave Square Park. Source: Google Earth.

proposed design strategies for this park. When these small, isolated planting beds feature complex planting plans, they tend to create an outsized amount of maintenance. The proposed design options aim to prioritize functionality while still creating appealing designs. The parameters guiding plant selection include: drought tolerance, appropriate size, survival in poor soils, and structural toughness.

Strategically Divide Maintenance Space

The division of maintenance space for this design relates to the arrangement of elements within the planting bed. Each of the design options delineates zones within the planting area, specifically the edges and the interior. In some proposed design options there is also a division between living plant material and inert, structural elements like logs. Compared with some of the other design strategies explored in this section, these divisions operate at a finer scale.

Engage with Edges

Edges are a defining feature of small, isolated planting beds, so they are an important part of the proposed design interventions. This strategy explores different ways of negotiating with the material transition

between pavement and a planting area in an urban setting. The edge conditions proposed in this design are aimed at containing and protecting the plantings. Because the pavement and planting area are on the same plane, the proposed interventions involving structural borders explore ways to vertically differentiate the planting areas. Other strategies employ the structural characteristics of vegetation to create these delineations.

Balance Persistent Features with Flexible Features

The proposed designs for the isolated planting beds at 12th AVE Square Park integrate structurally persistent elements, which will remain even as other elements fluctuate. Without structural delineation around isolated planting beds, design intent is solely communicated through the plant material. The planting beds are legible as planting beds, only when plants are present. Structures, such as log, walls, and stones are one way to add persistent elements. Another way is to increase the amount of evergreen species. Deciduous plants lose their foliage in the winter, contributing to a sparsely planted appearance. By increasing the amount of evergreen species, these planted areas can communicate their design intent all year round.

Design 1: Non-native Protection Perimeter



Design 2: Deciduous Leaf Retention



Design 3: Log Border



Figure 6.12 The three shrub bed composition strategies. Image by author.

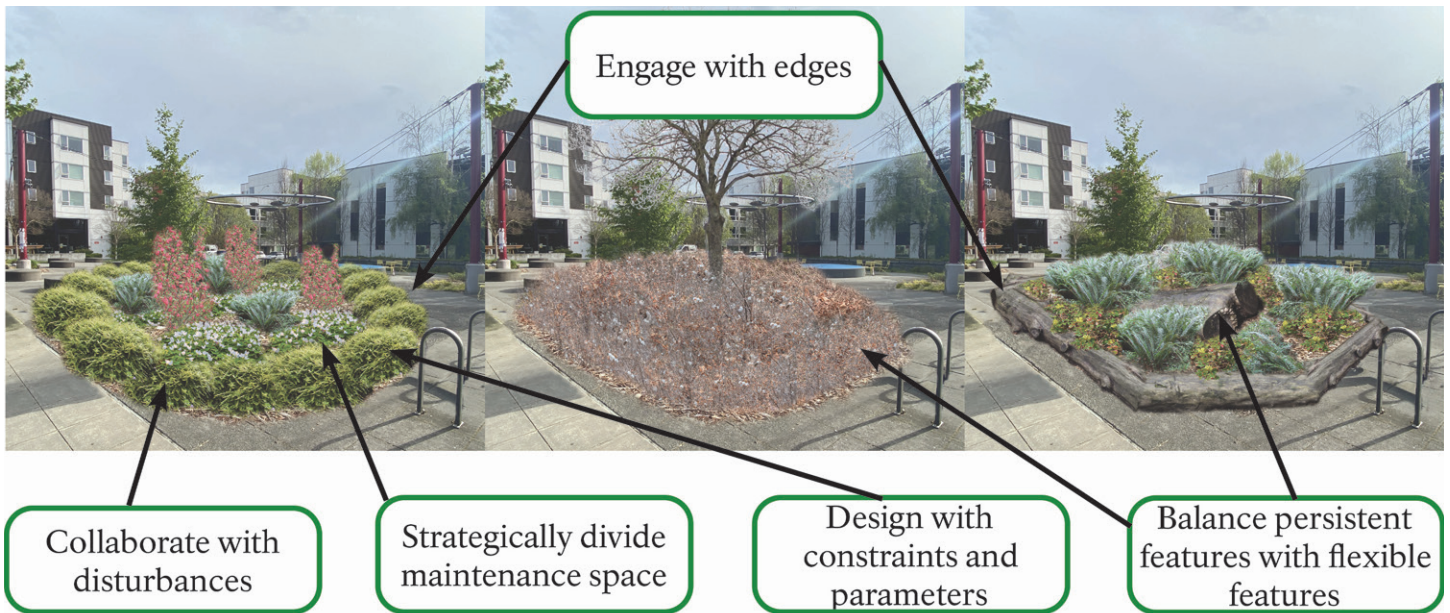


Figure 6.13 Demonstrating where the Maintenance Design Guiding Principles are applied at 12th Ave Square Park. Image by author.

Benefit Playground Park Interventions

This proposed design intervention looks at strategic ways of adding trees to turf areas while optimizing maintenance operations. This approach starts with an expansive area of passive turf at Benefit Playground Park (see Figure 6.14). Tree placement is then determined based on a typical mowing pattern so that the trees do not slow down or otherwise frustrate the existing maintenance operations (see Figure 6.15). Tree placement is also determined by the mature canopy spread for the proposed trees to avoid future issues relating to crowding.

These proposed designs use the Maintenance Design Guiding Principles (see Figure 6.16) in several ways: they are designed with constraints and parameters, strategically divide maintenance space, engage with edges, and balance persistent features with flexible features.

Design with Constraints and Parameters

This proposed design is derived from a few different maintenance parameters (see Figure 6.17). The first is the width of the mowing deck on a typical riding lawn mower, which is 72" in this case. Because mower operators slightly overlap the previous row of mowed turf to avoid missing any grass, this dimension is reduced to 66." In plan view, lines spaced every 66" provided a base grid. The next parameter is the width of the mulch



Figure 6.14 The site of proposed design interventions at Benefit Playground Park. Source: Google Earth.



Figure 6.15 The proposed design interventions at Benefit Playground Park. Image by author.



Engage with edges

Balance persistent
features with flexible
features

Strategically divide
maintenance space

Design with
constraints and
parameters

Figure 6.16 Demonstrating the application of the Maintenance Design Guiding Principles at Benefit Playground Park. Image by author.

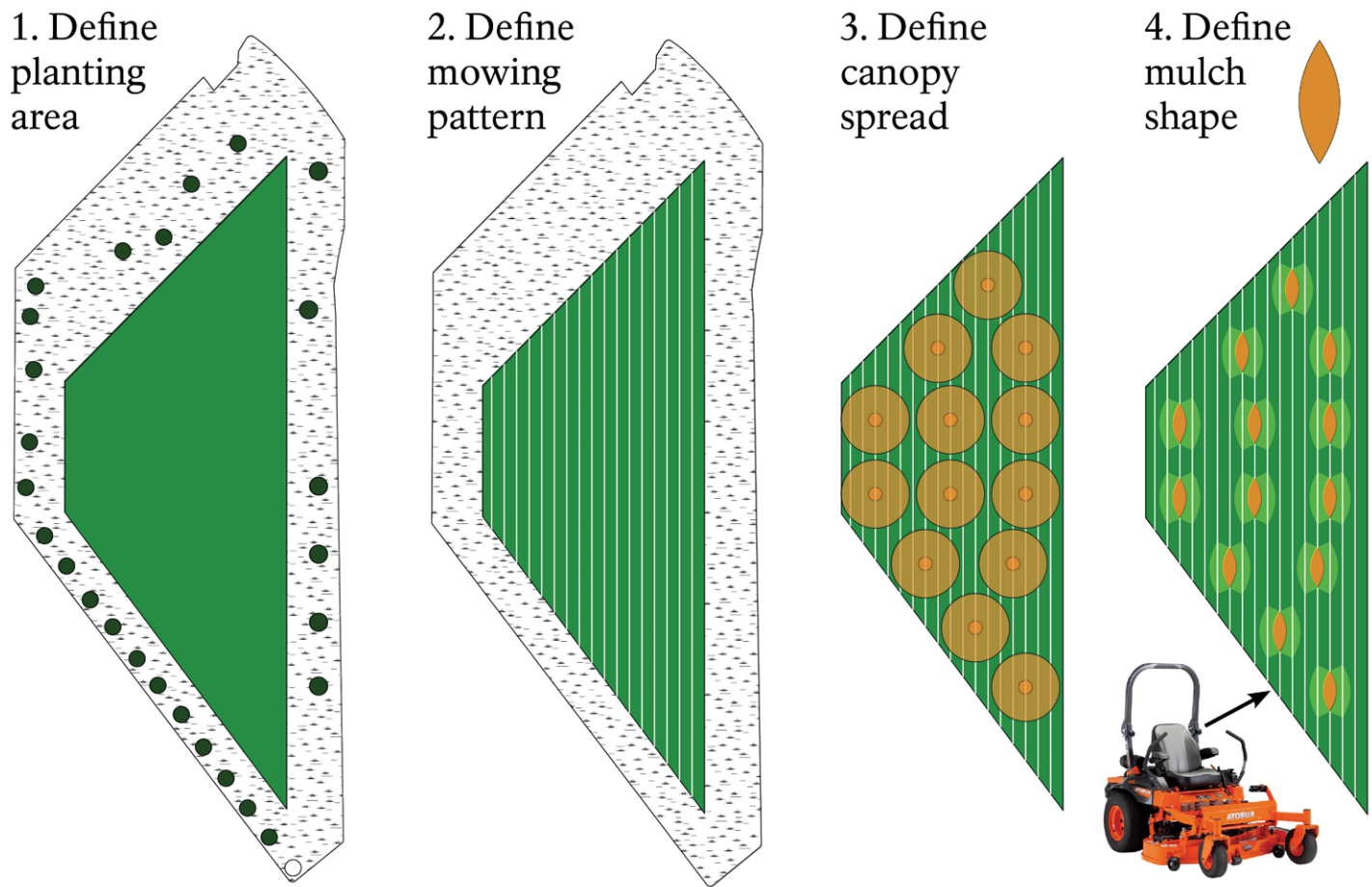


Figure 6.17 The design integrates several maintenance patterns to find the best place to plant trees in turf. Image by author.

ring for a newly planted tree. This is set at 6" based on the SPR standard tree planting detail. The next parameter is the mature canopy spread of the chosen tree species, which is set at 30' for this design. These three parameters are overlaid in plan view to optimize tree placement to not impede mower operations and ensure adequate space between the mature trees.

Strategically Divide Maintenance Space

This design intervention looks at one way for dividing a passive turf area. In this case the division of the turf centers around the addition of trees. For these two distinct plant typologies to coexist and be maintainable, a strategic division of the space is important. This design approach looks at optimizing tree placement without increasing the workload for the maintenance of the turf that remains. The design is driven by the juxtaposition of spaces that are maintained differently, using different equipment and tools.

Engage with Edges

The main engagement with edges in this proposed design is around the shape of the mulched areas at the base of newly planted trees. The standard tree

planting detail calls for a circular ring of mulch around the base of a tree. Because this design strategy is integrating the parameters of a riding lawn mower into the design, the mulch rings are adjusted to match the path of the lawn mower. As such, the mulch rings are tapered out into a tear drop shape to create an easier path for the mower operator to follow.

Balance Persistent Features with Flexible Features

This proposed design engages with persistence and flexibility through the design process itself. This design starts with the establishment of a set pattern based on the parameters of a lawn mower. This pattern will remain persistent as long as turf remains in the area. The flexibility comes from the many ways to interact with this pattern. As long as design elements are aligned to these rows, future sight changes can be integrated. This approach opens up possibilities to phase designs over time. An initial tree planting arrangement can be expanded in the future, or different interruptions in turf, such as pollinator meadows, raised planters, or public art can be added while still maintaining a smooth mowing pattern for turf maintenance.

Chapter 7: Conclusion



“What is the relationship between maintenance and freedom; what is the relationship between maintenance and life’s dreams.” (Ukeles, 1969, 3)



Figure 7.1 Designing with a municipal maintenance mindset. Image by author.

This research project looks at ways to strengthen the relationship between landscape design and landscape maintenance within SPR. It is important to approach municipal design through a maintenance mindset (see Figure 7.1) to integrate the knowledge and expertise of maintenance workers into park designs so these designs may be successful in the long run. This research considers the dynamic between design and maintenance using an asset-based approach, which identifies the existing strengths within the Seattle Park System as a starting point for recommendations and interventions.

The municipal context surrounding this topic is important to consider since a significant sector of the landscape architecture profession is geared toward urban projects on public land. Designs of this kind exist within a complex network of bureaucratic, political, jurisdictional, and public considerations and constraints. Maintenance operations sit at the intersection of these and represent the direct mediating mechanism for built landscape designs. Due to this context, a maintenance

design approach must be suitably calibrated to available maintenance resources.

The existing literature shines light on the interaction between landscape design and maintenance as a rich area for design possibility. The literature considers definitions of maintenance and care, the importance of representing and involving maintenance workers, and ways of relating to maintenance as a landscape architect. Several project precedents and studies also elaborate specific examples and case studies of maintenance design strategies.

The knowledge gained from the literature review was supplemented by three research methods: autoethnography, interviews, and sample site analysis. These three methods combined the personal reflections of this researcher, subject matter expertise from maintenance workers, and site observations to answer the research questions. The combination of these methods resulted in an understanding of the current relationship between design and maintenance at SPR, the identification of maintenance design strategies, and the application of these design strategies at the four sample sites through design development.

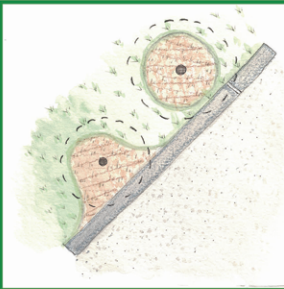
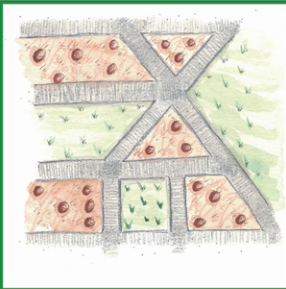
				
1. Design with constraints and parameters	2. Strategically divide maintenance space	3. Collaborate with disturbances	4. Engage with edges	5. Balance persistent features with flexible features
● Start with tools ● Use existing materials ● Derive forms from access and infrastructure ● Match maintenance resources	● Consolidate plants ● Use soft-surface trails ● Avoid pinchpoints in planting beds ● De-turfing patterns	● Damage becomes design ● Humans and non-humans as maintenance agents ● Plant failure becomes formal inspiration	● Build up/soften edges ● Shaped to match adjacent materials ● Fewer fragmented edges around plants	● Add durable structure to planting beds ● Phase plant establishment ● Evergreens vs. deciduous ● Planned decay

Figure 7.2 A summary of the Maintenance Design Guiding Principles. Image by author.

The results of this research were first distilled into Design Process Recommendations, which are geared toward addressing the systemic issues impeding better collaboration between landscape designers and landscape designers. These recommendations are, 1. Consult maintenance workers early and often, 2. Focus on project handoff and establishment, 3. Integrate gardener's designs, and 4. Scale maintenance with new park acquisitions. It will take increased collaboration and additional maintenance resources to bridge the gap between designers and maintainers to improve the care of built landscapes.

The research results were then refined into Maintenance Design Guiding Principles, which are formal design strategies that can be used to rethink how Seattle's parks are designed through a maintenance lens. The Maintenance Design Guiding Principles are, 1. Design with constraints and parameters, 2. Strategically divide maintenance space, 3. Collaborate with disturbances, 4. Engage with edges, and 5. Balance persistent features with flexible features (see Figure 7.2). These guiding principles offer strategies to synchronize park design with available maintenance resources and practices at SPR. These five principles were applied through proposed design examples situated in each of the four sample sites: Hubbard Homestead Park, Fritz Hedges Park, 12th Ave Square Park, and Benefit Playground Park.

Each of these proposed designs deploys the Maintenance Design Guiding Principles in tangible ways. At Hubbard Homestead, a fragmented zone of paths and planting beds are integrated with the addition of soft-surface trails or a rustic seating area. At Fritz Hedges Park, existing parameters and constraints are used to establish planting areas bordered by logs to retain mulch and water. At 12th Ave Square Park, different structural combinations of plants and logs are explored to increase the likelihood of plant survival in harsh conditions. And finally, at Benefit Playground, new tree planting in passive turf is optimized by layering a typical mowing pattern with predicted tree growth. All of these proposed designs are intertwined with maintenance considerations to show the possibilities of designing with a maintenance mindset.

The consideration of maintenance realities and constraints early in the design process can unlock new opportunities for landscape design. In addition to increasing the functionality of design, a maintenance design paradigm can increase creativity and innovation of designs and help designers respond to the unpredictable conditions of the future. By engaging with the possibilities inherent in maintenance operations, designers can think beyond the ribbon cutting to set parks up for resilient and maintainable futures.

Bibliography

- Brickman, Dick. 1982. "Getting Your Slice of the Maintenance Pie." *Landscape Architecture* 72, no. 6: 86–86. <http://www.jstor.org/stable/44671490>.
- Cook, Robert E. 1996. "Is Landscape Preservation an Oxymoron?" *The George Wright Forum* 13, no.1: 42–53. <http://www.jstor.org/stable/43597457>.
- City of Seattle. 2014. "Seattle Parks and Recreation Parks Legacy Plan Goals and Strategies."
- City of Seattle. 2022. "Climate Resiliency in Seattle's Parks and Recreation System."
- Davis, Brian. 2013. "Landscapes and Instruments." *Landscape Journal* 32 (2). The University of Wisconsin Press: 293–308. doi:10.3368/lj.32.2.293.
- Engster, Daniel. 2005. "Rethinking Care Theory: The Practice of Caring and the Obligation to Care." *Hypatia* 20 (3). Oxford, UK: Blackwell Publishing Ltd: 50–74. doi:10.1111/j.1527-2001.2005.tb00486.x.
- Franco, Michelle Arevalos. 2022. "Invisible Labor: Precarity, Ethnic Division, and Transformative Representation in Landscape Architecture Work." *Landscape Journal* 41 (1). University of Wisconsin Press: 95–111. doi:10.3368/lj.41.1.95.
- Franco, Michelle Arevalos. 2023. "Care's Repair, Landscape's Labor." *Landscape Research* 49 (4). Abingdon: Routledge: 584–94. doi:10.1080/01426397.2023.2270492.
- Geffel, Michael. 2020. "Landscape Design through Maintenance: Field Case Studies in Parametric Mowing." *Landscape Journal* 39 (2). University of Wisconsin Press: 1–16. doi:10.3368/wplj.39.2.1.
- Holmes, Rob. 2020. "The Problem with Solutions." *Places (Cambridge, Mass.)*, no. 2020 (July) doi:10.22269/200714.
- Jacobs, Sara, and Taryn Wiens. 2024. "Landscapes of Care: Politics, Practices, and Possibilities." *Landscape Research* 49 (3). Abingdon: Routledge: 428–44. doi:10.1080/01426397.2023.2266394.
- Kellum, Jo. 1999. "The Legacy of Design." *Landscape Architecture*, September 1.
- Kirkwood, Niall. 2004. *Weathering and Durability in Landscape Architecture : Fundamentals, Practices, and Case Studies*. Hoboken, N.J: John Wiley. <http://catdir.loc.gov/catdir/toc/ecip047/2003017376.html>.
- Krause, Karl. 2021. "Whose Eyes on the Street?" *Landscape Architecture Magazine*, May 11.
- Manzo, Lynne C, and Douglas D Perkins. 2006. "Finding Common Ground: The Importance of Place Attachment to Community Participation and Planning." *Journal of Planning Literature* 20 (4). Thousand Oaks, CA: SAGE Publications: 335–50. doi:10.1177/0885412205286160.
- Markey, Paul. 2025. "Centring the Self in Participatory Research: An Autoethnography-Led, Mixed-Method Approach to Research for Those Conducting Collaborative Research With Hard-To-Reach Groups." *International Journal of Qualitative Methods*. 24. 10.1177/16094069251354901.
- Mattern, Shannon. 2018. "Maintenance and Care." *Places*, November.
- Ramos Montañez, Smirla. 2023. "Advancing Equity through Research: The Importance of Asset-Based Approaches and Methods." *Journal of Applied Developmental Psychology* 86 (May). Elsevier Inc. doi:10.1016/j.appdev.2023.101540.
- Nassauer, Joan Iverson. 1995. "Messy Ecosystems, Orderly Frames." *Landscape Journal* 14 (2). Madison, WI: The University of Wisconsin Press: 161–70. doi:10.3368/lj.14.2.161.
- Pretorius, Edmarie, and Hanna Nel. 2012. "Reflections On The Problem-Based Approach And The Asset-Based Approach To Community Development." *The Social Work Practitioner-Researcher/ Die Maatskaplikewerk Navorsers-Praktisyn* 24 (2): 266–85.

- Raxworthy, Julian. 2018. *Overgrown : Practices between Landscape Architecture and Gardening*. Cambridge: The MIT Press.
- Sutton, Parker. 2022. "A New Aesthetic of Care." *Journal of Architectural Education* (1984) 76 (2). Routledge: 137–44. doi:10.1080/10464883.2022.2097532.
- Ukeles, Mierle Laderman. 2015. *Seven Work Ballets*. London, U.K: Sternberg Press.
- Ukeles, Mierle Laderman. 2018. "Manifesto for Maintenance Art 1969! Proposal for an Exhibition 'CARE.'" *Journal of Contemporary Painting* 4 (2). Intellect: 233–37. doi:10.1386/jcp.4.2.233_7.
- Ussery, Harvey. 2010. "The Scythe Historic Tool on the Modern Homestead." *Countryside and Small Stock Journal* (1985) 94 (2). Countryside Publications Ltd: 54.
- Van Valkenburgh, Michael and Saunders, William. 2013. "Landscapes Over Time: the Maintenance Imperative." *Landscape Architecture Magazine*, March.
- Woodward, Joan Hirschman. 2008. "Envisioning Resilience in Volatile Los Angeles Landscapes." *Landscape Journal* 27 (1). The University of Wisconsin Press: 97–113. doi:10.3368/lj.27.1.97.
- Zhorov, Irina. 2025. "As Sustainable Landscapes Become the Norm, Maintenance isn't Keeping Up." *Landscape Architecture Magazine*, February.

