

Sharing the Street: Shared Space in an American Context

Gregory Behrens

A thesis

submitted in partial fulfillment of the
requirements for the degree of

Master of Urban Planning

University of Washington

2014

Committee:

Ron Kasprisin

Anne Vernez-Moudon

Program Authorized to Offer Degree:

Urban Design and Planning

© Copyright 2014

Gregory Behrens

University of Washington

Abstract

Sharing the Street: Shared Space in an American Context

Gregory Behrens

Chair of the Supervisory Committee:

Ron Kasprisin

Urban Design and Planning

As our cities' foremost form of public space, streets play an integral role in social interaction. However, since the age of the automobile, streets have become more about providing conduits for transportation rather than public spaces for people. Trends such as pedestrian streets and complete streets have focused on multi-modal mobility in an effort to deemphasize the dominance of automobiles on streets. Similarly, shared space strives to accommodate all modes of transportation by deemphasizing the automobile and converting streets back into spaces for people. Shared space promotes design and behavior modification strategies to reinvigorate street life for all users, not just automobiles. Ultimately, the concept of shared space strives to repurpose streets into spaces for people to safely gather, socialize, and play, thus contributing to overall neighborhood well-being.

Originally a European concept, and still nascent in the United States, this study examines shared space in an American context. Three recent examples of shared space in the United States are studied: Bell Street Park in Seattle, WA; Davis Street in Portland, OR; and Santana Row Promenade in San Jose, CA. Combined with a review of shared space and public space best practices, this case study examination reveals how shared space functions in an American context, and what can be done to improve future shared space endeavors.

Results of the study indicate that many basic shared space principles – removal of traffic signage and markings, removal of curbs, installation of consistent paving – help to reduce traffic speeds and accommodate other modes of transportation such as walking and biking. However, these design prescriptions must also be packaged with appropriate land uses, building design strategies, and space programming to ensure an active street life. Vibrant shared spaces are just as reliant on an active off-street environment as they are on on-street design strategies.

Acknowledgements

I would like to thank Ron Kasprisin, not only for his guidance as chair of my thesis committee, but also for teaching me to never be precious with my work. I would also like to thank Anne Vernez-Moudon for her guidance on this thesis and her mentorship throughout the program.

I would like to thank my fellow cohort, whose energy, creativity, and ideas shaped my learning at least as much as any course did over the past two years.

I would like to thank my past and present colleagues from Caltrans, TMD, SDOT, and Echelon for giving me the opportunity to practice my passion and helping me prepare for this graduate school experience.

I would like to thank my family for their unending encouragement during all of my endeavors over the years – they have always made me certain that my decisions were the right ones. Special thanks to my parents and the Delany Mays for opening their doors and providing support, meals, and conversation while I was in Davis writing this thesis.

Finally, I would like to thank Abigail, who day in and day out has been the ultimate source of support, motivation, and relief during this process. Despite being hundreds of miles away, her presence has been felt immensely every single day over the past two years. This thesis would not be possible without her patience and encouragement.

Table of Contents

1. INTRODUCTION	9
1.1. Purpose	10
1.2. Structure & Methodology	11
2. BACKGROUND	12
2.1. Shared Space Overview.....	12
2.2. Shared Space History	13
2.3. Shared Space in the United States	15
2.4. Shared Space Summary	15
3. PUBLIC SPACE BEST PRACTICES.....	17
3.1. Transportation Functionality	17
3.1.1. Walking	18
3.1.2. Bicycling	18
3.1.3. Transit.....	19
3.1.4. Driving.....	19
3.2. Design.....	20
3.2.1. Size	21
3.2.2. Edges	22
3.2.3. Facades	23
3.2.4. Materials.....	23
3.2.5. Amenities.....	24
3.3. Activity.....	26
3.3.1. Adjacent Uses	26
3.3.2. On-street Activities.....	27
3.3.3. Density.....	27
3.4. User Experience	28
3.4.1. Comfort	28
3.4.2. Safety.....	29
3.4.3. Interest	30
4. CASE STUDIES.....	31
4.1. Case Study #1 – Bell Street Park – Seattle, WA	31
4.1.1. Transportation Functionality	33
4.1.1.1. Walking	33
4.1.1.2. Bicycling.....	34
4.1.1.3. Transit.....	34
4.1.1.4. Driving.....	35
4.1.2. Design.....	36
4.1.2.1. Amenities.....	39
4.1.3. Activity	41
4.1.4. Experience	43
4.2. Case Study #2 – Davis Street – Portland, OR	45
4.2.1. Transportation Functionality	47
4.2.1.1. Walking	47
4.2.1.2. Bicycling.....	48
4.2.1.3. Transit.....	49
4.2.1.4. Driving.....	49
4.2.2. Design.....	50
4.2.2.1. Amenities.....	54
4.2.3. Activity	55

4.2.4. Experience	56
4.3. Case Study #3 – Santana Row Promenade – San Jose, CA	58
4.3.1. Transportation Functionality	59
4.3.1.1. Walking	59
4.3.1.2. Transit	61
4.3.1.3. Bicycling	61
4.3.1.4. Driving	62
4.3.2. Design	63
4.3.2.1. Amenities	66
4.3.3. Activity	67
4.3.4. Experience	70
5. CASE STUDIES EVALUATION	71
5.1. Transportation Functionality	71
5.2. Design	73
5.3. Activity	75
5.4. User Experience	76
6. LESSONS LEARNED	77
6.1. Further Study	80

Table of Figures

Figure 1. Bell Street Park Section Diagram.....	32
Figure 2. Pedestrians are able to cross midblock.....	33
Figure 3. Bike racks allow bicyclists to conveniently access the park.....	34
Figure 4. The travel way includes subtle curves to reduce traffic speeds.....	35
Figure 5. Bell Street Park Plan Diagram.....	36
Figure 6. Textured paving informs visually impaired users that they are approaching the travel way.....	37
Figure 7. Rain gardens capture storm runoff and provide a buffer between the sidewalk and travel way.....	38
Figure 8. Recent development in Belltown has brought higher densities to the neighborhood ...	39
Figure 9. Tables and chairs provide formal seating for users to sit and rest or socialize	40
Figure 10. Small stone blocks provide secondary seating while also protecting pedestrians from the travel way.....	41
Figure 11. Mid-rise apartment buildings are common along the Bell Street Park	42
Figure 12. Typical on-street activity along the Bell Street Park.....	43
Figure 13. Davis Street Festival Street Section Diagram	45
Figure 14. Pedestrian and automobile paths are separated by bollards	46
Figure 15. At-grade crossings facilitate pedestrian crossing at the intersections	47
Figure 16. Bike racks serve bicyclists while adding extra protection between the pedestrian and automobile realms.....	48
Figure 17. Drivers must navigate between two planters before entering the festival street	49
Figure 18. Davis Street Festival Street Plan Diagram	50
Figure 19. Curbless sidewalks are instead lined with granite bollards.....	51
Figure 20. Planters mark the entrance to the festival street and provide room for seating and trees	52
Figure 21. Blank facades are common on the festival street	53
Figure 23. Buildings along the festival street share a common ornamental motif	55
Figure 24. Santana Row Promenade Section Diagram.....	58
Figure 25. The sidewalk provides room for pedestrian movement and amenities	60
Figure 27. Pedestrians walk freely in the roadway	62
Figure 28. A long stretch of at-grade roadway with uniform paving represents shared space principles.....	63
Figure 32. Decorative planting welcomes users to the Promenade	66
Figure 34. Sidewalks are wide enough to allow for outdoor dining alongside traveling pedestrians.....	68
Figure 35. The central median provides space for special events.....	68
Figure 36. The Promenade is lined with four-story mixed use buildings.....	69
Figure 37. Transportation Functionality Evaluation.....	71
Figure 38. Design Evaluation	73
Figure 39. Activity Evaluation.....	75
Figure 40. User Experience Evaluation	76

1. INTRODUCTION

During the post-World War II American suburbanization boom, new development patterns responded to a widespread public desire for more space and an opportunity to escape the ills of urban life. These developments took the form of suburbs, low density, automobile-oriented neighborhoods situated well away from the traditional urban centers (Teaford, 1986).

As growth occurred away from the city center, downtowns across the country began to suffer from population loss and economic setbacks (Teaford, 1986). The overall number of trips into downtown cores decreased across the country, as well as the percentage of citywide retail sales occurring at downtown retailers (Teaford, 1986). While cities experienced a substantial disinvestment in their downtown cores, resources were also increasingly being diverted to roads, utilities, and other infrastructure to support the suburban automobile-oriented lifestyle. As such, this era represented a significant shift to an automobile-dominant transportation system throughout America, supported by an expansion of suburban housing, jobs, and retailers (Teaford, 1986). From the Federal Highway System to the construction of major local arterials, cities grew with the understanding that the car was king.

In recent decades, American cities have begun to reconsider the role of cars in local and regional transportation networks, as details regarding the detrimental environmental and health effects of driving have emerged. Moreover, the negative impacts of cars on the built and social environment have been realized. Broad arterials and expansive parking lots have dedicated an enormous amount of city land to automobiles, while automobile infrastructure separates and isolates neighborhoods and communities (J. Jacobs, 1961). One early effort to stem the growth of

automobiles and revitalize urban neighborhoods was the mixed-success pedestrian mall, which gave entire streets back to pedestrians (Brambilla, 1977). In the 1990s, new urbanism principles argued for more compact, pedestrian-friendly neighborhoods to reduce the residents' dependence on driving and encourage more walking and bicycling (Grant, 2006). More recently, complete streets design schemes have been adopted around the country in an effort to accommodate all transportation modes on city streets.

A more radical approach has recently been explored by American cities, one that has existed in Europe since the 1960s. On shared space streets, automobiles, bicycles, and pedestrians are all considered equals, with the intent to reactivate pedestrian street life by deemphasizing the automobile as the dominant travel mode. Shared space is based on the notion that removing street signage, markings, and curbs forces automobile users to negotiate streets more cautiously, creating a safer environment for all street users. Where shared space differs from other design prescriptions is that it depends on a behavioral shift for drivers, who must now be more attentive and hold themselves accountable for their interactions with other streets users, rather than relying on traditional street controls to determine travel movements and timing.

1.1. Purpose

While shared space has existed in Europe since the 1960s, it is still a relatively new concept in the United States. Most examples of shared space in the United States only date back to the 2000s, as such, the American shared space experience is in its infancy. However, enough examples exist today to begin to compare the strengths and weaknesses of American shared spaces, helping to form an American shared space vocabulary. This study seeks to identify the

successful characteristics of American shared spaces through a thorough examination of existing American shared spaces. Three case studies provide the basis of the analysis – Bell Street Park in Seattle, WA; Davis Street Festival Street in Portland, OR; and the Santana Row Promenade in San Jose, CA. These case studies represent the American shared space experience in its nascent stage, each with varying contexts and design features.

1.2. Structure & Methodology

The study is supported by a literature review, site visits, observations, travel counts, and geospatial analyses. Using a mixed quantitative and qualitative approach, it elucidates on shared space in the US context by examining the underlying land use conditions and design strategies that typically correspond with successful public spaces. The study is presented as follows:

- Shared Space Overview – definition of shared space and discussion of the international and American experience
- Best practices – summary of the characteristics of successful public spaces and streets according to notable urban design theorists
- Case Studies – in-depth look at each of the three case studies, including an overview of the shared space, a description of the physical space, and observations from the site visits
- Case Studies Evaluation – a comparison of the case studies to determine which characteristics best fulfill the elements of successful public spaces identified in the Literature Review
- Lessons Learned – a set of design recommendations based on the conclusions from the Case Study Evaluation

Supporting documents are provided in the Appendices.

2. BACKGROUND

2.1. Shared Space Overview

The concept of shared space combines street design treatments, social protocols, and travel behavior modifications in an effort to create pedestrian-friendly and active streets. Shared space seeks to balance transportation functionality with a lively public street life by reinvigorating pedestrian use of the street and creating more “people space” (Fryslân Province, 2005). As the foremost public space in cities, streets provide the potential for robust social interaction and community engagement. However, streets, especially in the United States, most commonly focus on the movement of automobiles as their primary role, not the movement of people or facilitation of social interaction. The primary objective of shared space is to reduce the dominance of automobiles by creating a balanced multi-modal street where all users are considered equals, thus encouraging walking and an active street life (Hamilton-Baillie, 2008).

Shared space challenges the segregation principle, which is based on the notion that the physical separation of transportation modes enhances the safety for all users of the street. However, research suggests that the physical separation of automobiles, bicyclists, and pedestrians actually creates a false sense of safety (Speck, 2012). Segregated travel lanes, traffic signals, and abundant signage give the appearance that the street controls the travel within it, not the operators of vehicles or pedestrians. As a result, drivers travel at high speeds and pay attention only to the traffic controls that surround them, rather than the other users of the street (Hamilton-Baillie, 2008). By creating a travel situation where drivers are held accountable for their actions, shared space places the onus on drivers to observe and behave like pedestrians, creating a safer

environment for all street users (Great Britain Department for Transport, 2011). These “mental speed bumps” encourage heightened attentiveness and lead to driver behavior that exhibits lower travel speeds and increased courteousness towards other users of the street (Engwicht, 2005).

While there is no specific set of design guidelines for shared space, most shared spaces do share some common design characteristics. First, curbs are removed from the street, creating a level travel way that removes the physical and psychological barrier to pedestrian movement (Great Britain Department for Transport, 2011). The removal of curbs signifies that pedestrians are not expected to remain constrained to sidewalks along street edges. Often times, paving is consistent from building front to building front to further emphasize the uniformity of the streetscape.

Another hallmark of shared space design is the removal of road signage and markings, further reinforcing the need for drivers to be more observant of their surroundings and negotiate the travel way by acknowledging other users. By removing the automobile-pedestrian hierarchy, automobile speeds are inherently lowered, and pedestrians are able to move more freely and naturally within the street realm.

2.2. Shared Space History

Traditionally, most urban roads were shared spaces prior to the proliferation of the automobile. Carriages, streetcars, and pedestrians traveled side by side on rugged roads, negotiating directly with one another to avoid conflicts. Segregated streets appeared in the 1950s, when master planned communities in the United States and Europe looked to maximize the local distribution of automobiles alongside massive investments in automotive interstate systems.

Shared space in its contemporary form first appeared in the 1960s, when Joost Vahl began to explore methods to reduce the impact of traffic on social spaces in The Netherlands (Hamilton-Baillie, 2008). Later formalized as the *woonerf*, Vahl's approach focused on removing signage, markings, and curbs to transform streets into spaces for people, rather than just for cars. The *woonerf* initially fell out of favor as it became standardized, since specific built design prescriptions were counter to the concept's focus on behavioral change. The *woonerf* was revived in the late 1970s by Hans Monderman, a traffic engineer in the northern Dutch provinces (Hamilton-Baillie, 2008). Tired of the often dangerous traffic engineering approach of separating automobile from pedestrian uses, Monderman turned to shared space as a tool to repurpose streets for people. Similar to Vahl, Monderman explored the removal of signage, markings, and curbs in an effort to reduce traffic speeds. Monderman experienced widespread success with his shared space schemes, with some examples experiencing a 40 percent drop in traffic speeds, and others, a reduction in annual injury rates from 8.3 to 1 (Hamilton-Baillie, 2008).

Monderman's success in The Netherlands gave way to shared space attempts elsewhere around the world. Cities in Denmark, France, Germany, Spain, and Sweden incorporated shared space principles in efforts to reduce traffic speeds, improve pedestrian safety, and revitalize struggling downtowns. Shared space has been embraced more recently by the United Kingdom on a much larger scale, with the Great Britain Department of Transport formally recognizing the approach as part of its street design manual.

2.3. Shared Space in the United States

Informal shared spaces have existed in the United States for years – one such example is Pike Place Market in Seattle, WA. Here, pedestrians and automobiles coexist along the streetfront immediately abutting the market, with automobiles crawling at a pedestrian’s pace. However, cities throughout the United States have been less quick than their European counterparts to experiment with formal shared space. Generally partial to traditional traffic engineering solutions, American cities have resisted the unconventional shared space strategies (Dumbaugh & Lee, 2010; Speck, 2012). Some hesitancy results from the attachment to traffic Level of Service standards, and an uncertainty as to how shared space can fully address the stringent design requirements laid out by the Americans with Disabilities Act. Since the 2000s, some cities have found a way to implement shared space design schemes within their streetway design guidelines. In 2002, San Jose, CA opened Santana Row, a high-end mixed-use village with a central shared space artery. Portland, OR opened the Davis Street Festival Street in 2006, a shared space scheme that can also be converted to a temporary pedestrian-only space for special events. The Bell Street Park in Seattle, WA provided four blocks of continuous shared space in the Belltown neighborhood when it opened in 2014. These contemporary American examples of shared space will be examined in greater detail in the Case Studies chapter.

2.4. Shared Space Summary

As a design and behavior modification concept, shared space attempts to transform the urban built environment and the manner in which people interact with space. The “less is more” design approach to shared space removes the artificially inflated sense of safety on streets, forcing drivers to operate their vehicles more cautiously, thus enhancing the overall safety for all street

users. The extent to which the three American case studies fulfill these design criteria and functional goals of shared space will be discussed in more detail in the Case Studies Evaluation section.

3. PUBLIC SPACE BEST PRACTICES

As the foremost type of public space, streets are an essential part of the public realm in our cities. Shared space streets, in an attempt to fulfill their role in the transportation network while providing a lively public life for people, must strive to meet the criteria that define a successful public space. Over the years, urban design theorists have posited what exactly comprises a successful public space, ranging from how the space functions as a venue for gathering and socializing, to how the space enhances the walkability of a neighborhood. These best practices for a successful public space can be categorized into four groups, especially as they relate to streets: transportation functionality, design, activity, and user experience. These four categories represent the entire spectrum of how public space is used and the qualities considered in its design. Separating the public space best practices literature in this manner allows for common characteristics to be grouped together, providing a simplified framework for the case study discussion and evaluation. The following chapter will discuss the features of successful public space according to notable theorists.

3.1. Transportation Functionality

Many urban theorists have posited that the reliance on automobiles has led to the degradation of our city streets, and that the quality of streets can be restored only if conditions are altered such that driving becomes both unnecessary and inconvenient (J. Jacobs, 1961). Shared space strives to accomplish this by accommodating all transportation modes in an effort to encourage more walking and bicycling instead of driving. A mix of transportation modes facilitates more life on city streets, making street life more vibrant by enabling different activities to support and stimulate each other (Gehl, 1980). As travel speeds decrease, whether it is through slower

automobile speeds or more walking and bicycling, and people are encouraged to spend more time on the street, cities become more lively (Barnett, 2011; Gehl, 1980).

3.1.1. Walking

By encouraging the lowest speed of travel, walking is the foremost mode of transportation for creating lively city streets. Streets that are most amenable to walking are those that allow for walking at varying paces, with walkways that are not overly congested yet still provide some sense of comfort through a sustained level of activity (A. Jacobs, 1993). Walkways are generally comfortable for users with a pedestrian density of 3 or 4 pedestrians per minute per meter, while crowding begins between 10 and 15 pedestrians per minute per meter (A. Jacobs, 1993; Gehl, 1980). Walking quickly and unimpeded allows streets to be used as transportation corridors, while allowing for walking at a leisurely pace maximizes the opportunities for users to interact with the urban environment (A. Jacobs, 1993). Streets with frequent entryways and short blocks facilitate walking by allowing for more transportation choices for their users, improving the overall pedestrian accessibility to the street (A. Jacobs, 1993; Speck, 2012). Streets must also be easily navigable for pedestrians, with short crossing distances to facilitate convenient and safe crossings (A. Jacobs, 1993; J. Jacobs, 1961). In shared space areas, streets must accommodate safe pedestrian crossings along the entire extent of the roadway by significantly reducing automobile speeds.

3.1.2. Bicycling

Like transit, bicycling provides a viable mid- to long-distance transportation alternative to the automobile. The advantages of bicycling are abundant – bicycling requires less time compared to

driving and parking, uses the same amount of energy as walking while traveling three times the distance, and emits zero emissions (Speck, 2012). On multi-modal corridors and shared space streets, biking enhances pedestrian safety and decreases accidents by reducing automobile speeds (Speck, 2012). Bicycles can be incorporated into the transportation network in a variety of methods including bicycle lanes, shared routes, and separated paths. Shared space streets integrate bicycle transportation like any other travel mode, with cyclists expecting to use the travel way along with vehicles. As such, vehicles must travel at low speeds to create a safe bicycling environment (Speck, 2012). Bicycle facilities (bicycle racks, bicycle lockers, fix-it stations, showers, etc.) should be provided at destinations to accommodate bicycle users.

3.1.3. Transit

A robust public transportation system supports walkability by allowing travelers to complete the majority of their trips via transit vehicle rather than automobile. When transit users are not riding a bus or train, they are pedestrians during the first and last mile of their trip. As such, cities must be developed in a pedestrian-friendly manner to support convenient access to and from transit service (Speck, 2012). For shared spaces, transit is not an essential element within the space itself, but access to nearby transit services is essential for delivering pedestrians from distant locations.

3.1.4. Driving

While the quality of city streets is dependent on controlling traffic levels, urban neighborhoods can seldom survive without automobile access (Speck, 2012). Unless extremely high densities are present, stores need vehicle access for customers, services, supplies, and transport of their

own products (J. Jacobs, 1961). Particular attention needs to be given to parking to ensure that vehicle users can conveniently access destinations without inundating the street with automobile amenities. Parking should be located within walking distance of destinations, but not too close, to convert automobile users into pedestrians for some portion of their trip (Gehl, 1980). In pedestrian-oriented areas, parking should be hidden from view (e.g. off-street parking garages) to allow for more streetscape amenities for pedestrians (Barnett, 2011; Speck, 2012). Smart parking strategies should be considered to help cities control traffic by limiting or charging for parking (Barnett, 2011; Speck, 2012). Especially on shared space streets, automobiles need to be accommodated in a manner that reduces vehicle speeds to ensure the safety of pedestrians and bicyclists (Speck, 2012). A 1 mph reduction in vehicle speed generally corresponds with a 5 percent reduction in injury accident frequency (TRL Limited, 2003).

3.2. Design

For any space, design dictates how its users interact with their surroundings. On streets, design determines where various transportation modes can travel and how the private realm meets the public realm. In public squares, design determines the size of the space and the seating available to its users. The design of shared space must accommodate both of these uses, as a place to both travel and sojourn.

As a path, streets are the predominant element in the image of a city, since daily travel requires that users experience paths on a regular basis (Lynch, 1960). Given the importance of the path to the imageability of the city, they must be designed with care to develop continuity and prevent confusion for travelers. Improving the imageability of a path can help to attract users and

establish the path as a primary travel way. This can be done by concentrating special uses or activities, creating unique building facades, using special pavement textures, introducing a uniform style or motif, and providing amenities (Lynch, 1960). Other methods such as creating a gradient (e.g. gradually narrowing street width) or slope can help to give directionality to a path for improved imageability (A. Jacobs, 1993; Lynch, 1960). Providing scale to a path allows users to know how far along a path they have traveled, making long paths seem more manageable (Burton & Mitchell, 2006; Gehl, 1980; Lynch, 1960). Active and attractive pathways generally feature some combination of these factors.

The street serves a dual role as the primary component of a transportation network, as well as the most readily accessible form of public space. As a public space, streets can be designed to influence how many people and events use the space, how long activities last for, and what types of activities can develop (Gehl, 1980). Activity gives life to the street – as such, design should focus on ensuring that more people use the street and encouraging longer individual stays (Gehl, 1980). Several attributes of the street can be designed to accomplish this, including size, edges, facades, materials, and amenities.

3.2.1. Size

Spaces should be small in order to achieve human-scale design and convey a sense of enclosure for their users (Speck, 2012). Well-enclosed spaces invite users to linger, helping to increase street activity. Enclosure requires a balance of horizontal definition (street width) and vertical definition (building height) to provide a sense of safety without overwhelming users (A. Jacobs, 1993). Generally, people feel comfortable when they can recognize details, such as faces and

signs, from up to 82 feet away (Gehl, 1980). The ideal human-scale is achieved with a building height of 30 feet (3 stories) and street width of 72 feet, or a 1:2.5 ratio (A. Jacobs, 1993). Wider streets require taller buildings in order to maintain this human-scale ratio, creating a towering street frontage that is uninviting for pedestrians. Wider streets also create an unsafe environment for pedestrians due to greater crossing distances and higher automobile speeds (Speck, 2012). Shared space principles strive to achieve this human-scale design by creating small spaces that reduce vehicle speeds and ease pedestrians crossing.

3.2.2. Edges

Street edges, such as sidewalks and building entryways, are important transition spaces between the public realm of the street and the private realm of buildings. Since people are naturally drawn to edges, these spaces should be designed as “soft edges” where users of the street and building occupants can comfortably mix (J. Jacobs, 1961, Gehl, 1980). Improving the permeability of street edges can merge regular street activity with the uses of adjacent buildings, helping to enhance the overall life on the street. This can be accomplished through a variety of methods that attract both moving and lingering pedestrians, including transparent windows, good interior lighting, outdoor dining, seating, displays, awnings, and ample doorways (A. Jacobs, 1993; Speck, 2012). Although shared space allows for the mixing of transportation modes in the center travel way, pedestrians still primarily drift towards the edges of the street (J. Jacobs, 1961). Even on pedestrian only streets, people mostly keep to the edges. As such, edge design is an important part of shared space principles.

3.2.3. Facades

Facades contribute to edges by creating an attractive “street wall” for users, encouraging more interaction between pedestrians and their surroundings (Lynch, 1960; Speck, 2012). Facades that are most attractive to pedestrians are those that maintain constant visual interest. Several strategies can contribute to more visually stimulating street facades. First, constructing more buildings along a block provides more opportunity for diverse architectural styles to be put on display (A. Jacobs, 1993; J. Jacobs, 1961; Speck, 2012). Maximizing the number of doorways along a street increases the opportunities for coming and going between the street and adjacent buildings, providing a constant flow of pedestrian activity (Gehl, 1980). Façade details such as pillars, cornices, and awnings can enhance visual interest by enhancing the texture of an otherwise plain building front (A. Jacobs, 1993). Large, transparent windows that allow pedestrians to see the contents and activities of a building allow the building to become an extension of the street, rather than an enclosed appendage (Gehl, 1980). Finally, large blank walls, few entrances, and street-front parking lots should be avoided in order to prevent the dispersal of activity (Gehl, 1980; Speck, 2012).

3.2.4. Materials

High quality materials should be carefully chosen to enhance the overall look and functionality of the street (A. Jacobs, 1993). Ground materials can be used to unify a space, such as installing special pavers on sidewalks and crosswalks to signify a uniform pedestrian space (Lynch, 1960). This strategy is used extensively in shared space to show that the sidewalks and travel way are regarded as equivalents. Materials such as cobblestones, sand, and loose gravel are unsuitable surfaces for a street, as well as uneven ground surfaces and slippery pavements (Gehl, 1980).

These materials and conditions are difficult to traverse on foot, especially for less able-bodied users (Burton & Mitchell, 2006; Gehl, 1980). Materials should be maintained regularly to prevent degradation and help maintain the aesthetic quality of the space (A. Jacobs, 1993). Maintaining some level of quality ensures that pedestrians will continue using the space (Gehl, 1980).

3.2.5. Amenities

The quality of a space can be enhanced by the provision of carefully placed amenities (Lynch, 1960). While physical design and surrounding uses are the main generators of activity within a space, amenities can help to retain activity and interest by enhancing the user experience (A. Jacobs, 1993). **Streetlights** contribute to the quality of a space by illuminating walking surfaces, building facades, and other users of a space, improving the visibility of a space and providing a sense of safety during nighttime hours (Gehl, 1980; A. Jacobs, 1993). Lampposts themselves provide a place for users to congregate both during the day and night, while also acting as barriers between pedestrians and automobiles when placed between the two travel ways.

Seating is an essential element of inviting people into a space, providing users with a place to linger, interact, and rest (Gehl, 1980; A. Jacobs, 1993). Primary seating (benches and chairs) provides more demanding users with a formal place to rest with ease or assemble in a group, while secondary seating (stairways, pedestals, steps, etc.) serves more able-bodied users in high demand areas (Gehl, 1980). Primary seating is a key feature of universal design, allowing less able-bodied users to comfortably traverse a pathway with occasional rests (Burton & Mitchell). Seating should be placed along facades or other edges, as people tend to prefer to look inward

towards activity rather than sitting with their backs faced to a space (Gehl, 1980). Placement of seating along a façade also helps to create a “soft edge” between building entrances and an outdoor space by allowing users to linger on their way in and out of buildings (Gehl, 1980).

Street **trees** can make a tremendous difference in the overall quality of a space (Gehl, 1980; A. Jacobs, 1993; Lynch, 1960; Speck, 2012). Tree lined streets help to protect pedestrians from drivers, while also encouraging drivers to slow, improving both the perceived and actual safety of a street (Speck, 2012). Trees also provide environmental benefits such as shade, a reduction in ambient air temperature, absorption of rainwater and emissions, and limiting the effects of wind (Speck, 2012). Trees are most effective when spaced every 15 to 25 feet without interruptions for driveways or other streetscape features (A. Jacobs, 1993). Planter beds or boxes carry some similar benefits to trees, while also enhancing the overall aesthetic of a space.

Clear **signage** can be used to inform users of their surroundings, including wayfinding and signifying the location of destinations such as stores, restrooms, information kiosks, and transit stops. Signage is integral to the principles of universal design, providing a clear indication of the contents of a building (Burton & Mitchell, 2006). While signage can help to improve the legibility of the uses surrounding a space, one of the key features of shared space is the removal of unnecessary road signage, thus encouraging drivers to negotiate roadways and potential conflict with other users of a street (Hamilton-Baillie, 2006). A balance between clear signage identifying buildings uses and removing excessive road signage can achieve shared space objectives while maintaining legibility.

When positioned properly, streetlights, benches, trees, planter boxes, and other street furnishings are key features of shared space design. Without curbs in a shared space arrangement, these furnishings are the main delineators between the pedestrian realm and mixed travel roadway. Amenities also provide an opportunity to reinforce a cohesive style or motif within a space.

3.3. Activity

A sustained level of on-street and off-street activity ensures that people will utilize a public space. Activity takes place in a variety of forms, from shopping to traveling to socializing. The more activity within and surrounding a public space, the more vibrant and lively the space becomes, as people will be drawn to the space for human contact and visual stimulation (Gehl, 1980). While the design of a space is important, activity is dictated by the surrounding uses and opportunities for interaction within the space (Speck, 2012).

3.3.1. Adjacent Uses

The uses and amenities surrounding a space should be mixed and varied to attract a diverse set of users and foster a vibrant street life (Barnett, 2011; Gehl, 1980; Grant, 2006; A. Jacobs, 1993; A. Jacobs, 2011; J. Jacobs, 1961). The mixing of uses such as residential, commercial, office, educational, medical, civic, and entertainment will prevent the space from becoming one dimensional, while also helping to attract users during all hours of the day and days of the week. Locating these non-residential uses close to homes allows for residents to complete activities within close walking distance, reducing the need to drive for routine daily travel (Speck, 2012). The presence of high activity anchors such as universities, movie theaters, and libraries is particularly important for generating activity (Speck, 2012). For more unique pedestrian-oriented

street configurations such as shared space, success is more likely when applied to an area that already contains buildings that can attract and sustain street life (Speck, 2012). It is essential that the application of shared space principles plays off of the strengths of the surrounding area, rather than prescribing a generic set of design features that is not sensitive to the context of the neighborhood (Fryslân Province, 2005).

3.3.2. On-street Activities

Streets must be designed for pedestrians since most meaningful contact with others takes place on foot, as it affords people time to experience, pause, or become involved in their surroundings (Gehl, 1980). Street design (discussed more in the Design section) should provide opportunities for sojourning and sitting to support the lingering of its users (Gehl, 1980). Streets should also have interesting and permeable building facades to encourage users to interact with off-street private uses. Special events, such as farmers markets and street fairs, also help to draw activity into the street.

3.3.3. Density

Active street life is supported by the constant presence of people and events, not by buildings and streetscape features (Gehl, 1980). Locating housing near public spaces ensures that at least a base level of users will live in close vicinity to the public space (Speck, 2012). In addition to providing housing, a minimum residential density of 15 dwelling units (or 30 to 50 people) per acre is necessary to achieve active urban communities (A. Jacobs, 2011).

3.4. User Experience

The user experience determines how long a user will remain within a space, and whether or not a user will enter a space in the first place. In order to accomplish these objectives, spaces must be comfortable, safe, and interesting for users to experience. In this context, “user” refers to a pedestrian utilizing the space.

3.4.1. Comfort

Streets should be treated as “outdoor living rooms,” providing users with the comfort and opportunities for socializing that they would expect in their own home (Speck, 2012). Seating allows for stays of longer duration, while providing an opportunity for pedestrians to rest and socialize with one another (Gehl, 1980). The size and scale of a space must be human-scale to remain comfortable for its users. For pedestrians, smaller spaces (under 360 feet) with a sense of enclosure are most comfortable (Gehl, 1980; Speck, 2012). Long unprotected paths can be viewed as cumbersome – breaking up the path into stages or adding subtle turns can help to make them more comfortable (Gehl, 1980). On streets, Sidewalks must be uncongested to remain comfortable for pedestrians to walk on. Sidewalk widths should be adjusted according to peak pedestrian flows to ensure that pedestrian rates do not exceed 10 to 15 pedestrians per minute per meter (Gehl, 1980; A. Jacobs, 1993). The effects of weather need to be addressed by providing protection from adverse climactic conditions during the winter months and exposure to pleasant weather conditions during the warm summer months (Gehl, 1980; A. Jacobs, 1993; Speck, 2012). Awnings and overhangs provide shade and protection from rain, while trees provide shade and limit the effects of wind (Speck, 2012).

3.4.2. Safety

Pedestrians should feel safe on streets, with surrounding conditions promoting both a real and perceived sense of safety (Speck, 2012). First and foremost, pedestrians must be protected from vehicular traffic, either by separating pedestrians from automobiles entirely, or by reducing automobile speeds such that pedestrians and automobiles can coexist within the same space (Gehl, 1980; A. Jacobs, 1993; Speck, 2012). Shared space aims to mix all modes of transportation, thus, reducing vehicle speeds is of primary importance. Slow traffic not only helps to make pedestrians feel safe, but it also improves actual safety in the event of an accident – only 5 percent of automobile/pedestrian collisions results in fatalities under 5 miles per hour (Speck, 2012). Further, lower vehicle speeds result in fewer accidents, as recently experienced in London after a 20 mph speed limit decreased accidents by 56 percent. Low traffic speeds correspond with more response time for drivers to brake before a collision occurs as well as a higher likelihood that drivers will yield to pedestrians indicating a desire to cross a street (Dumbaugh & Li, 2011).

Shared space takes advantage of risk homeostasis, where people adjust their behavior to maintain a comfortable level of risk (Speck, 2012). Situations that feel uncertain or risky require that drivers proceed with caution, reducing their speeds and improving safety for pedestrians (Gehl, 1980). By mixing transportation modes, removing signage and street markings, and leveling the roadway with the sidewalk, shared space creates an environment where drivers feel less safe, thus requiring that they are more attentive and act like pedestrians while negotiating the street (A. Jacobs, 1993). Trees can also be used to improve safety by reducing vehicle speeds and serving as a barrier between pedestrians and automobiles (Speck, 2012). Finally, safety can be

enhanced by providing lighting, which helps to improve the visibility of people and surfaces during nighttime hours (Gehl, 1980).

3.4.3. Interest

Streetscapes must provide visual stimulation to attract pedestrians and create a pleasing user experience. Visual complexity maintains user interest in their surroundings by always providing users with something different to look at (A. Jacobs, 1993). This can take the form of interesting shadows created by the leaves of trees or varying architectural styles on building facades (A. Jacobs, 1993; J. Jacobs, 1961; Speck, 2012). Natural physical features such as slopes or mountains also contribute to interest by serving as a backdrop to the human built environment (A. Jacobs, 1993).

4. CASE STUDIES

Three case studies were selected for this study, each representing slight variations on the shared space concept. Each of these case studies are located in regions known for their innovative planning practices, as such, they provide good laboratories for testing shared space in an American context. Each of the sites was visited to record a variety of observations such as how users interacted with the space, how the space felt as a user, and how the design characteristics actually functioned. Further, a traveler count was taken to record the number of pedestrians, bicyclists, and automobiles who used the space. The counts were taken at the same time for all three case studies: 12:00 PM to 12:30 PM on a weekday. The case studies examined as part of this study are: Bell Street Park in Seattle, WA, Davis Street Festival Street in Portland, OR, and the Santana Row Promenade in San Jose, CA.

4.1. Case Study #1 – Bell Street Park – Seattle, WA

Completed in April 2014, Bell Street Park features four blocks of shared space in the heart of Seattle's Belltown neighborhood. Previously a two-lane one-way street, the park now features one-lane traffic with enhanced pedestrian and landscaping features. As part of the City of Seattle's Green Streets initiative, the park is the first formal shared space street in Seattle. While the Green Streets initiative does not explicitly call for shared space streets, shared space principles help to achieve the Green Streets objective of emphasizing pedestrians and open space over other street functions by reducing automobile speeds such that cars and pedestrians can occupy the same space (City of Seattle Department of Transportation).

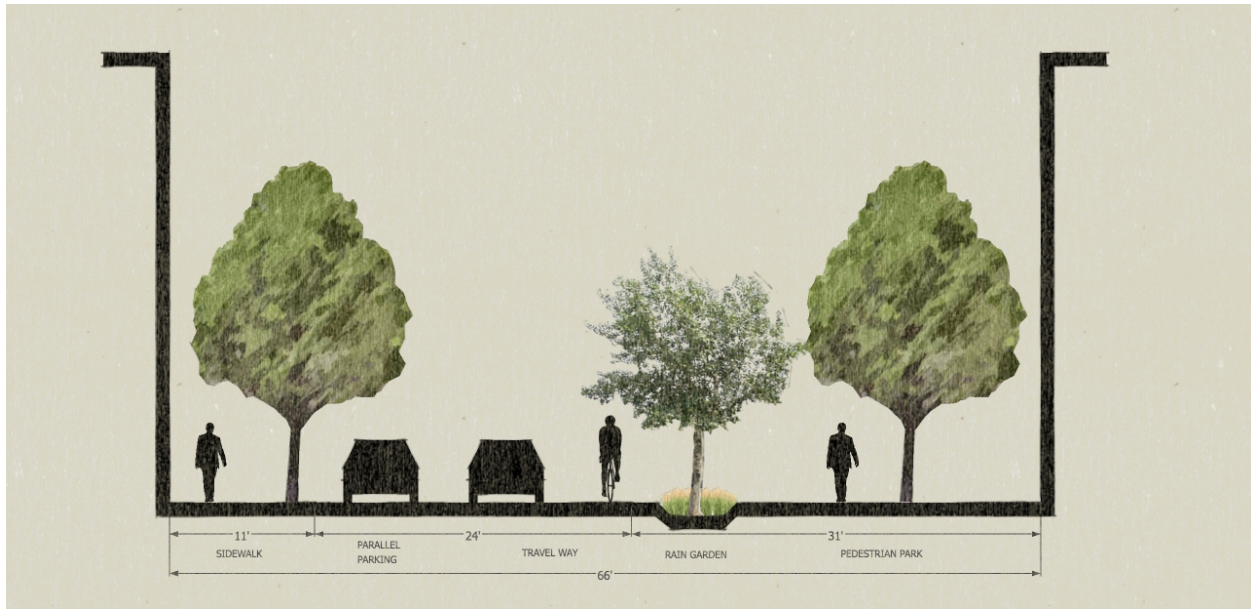


Figure 1. Bell Street Park Section Diagram

Situated just northwest of downtown Seattle, Bell Street Park serves as a pedestrian connection between the waterfront/Pier 66 cruise terminal and Denny Triangle/South Lake Union areas. The park also provides 56,000 square feet of valuable open space to Belltown residents, whose lone park, the Regrade Dog Park, provides only one-half acre of open space (City of Seattle Parks and Recreation). Given the high-density build-out of Belltown and the lack of available parcels, the Bell Street Park provides a context-sensitive solution in a constrained built environment.

The park extends from First Avenue to Fifth Avenue, bisecting major transit lines (including King County Metro Rapid Ride service) along Third Avenue. The corridor features a mix of residential, retail, and commercial uses, including low-income housing and human services agencies. The aforementioned Regrade Dog Park is located at the southeast corner of the Bell Street and Third Avenue intersection. The four-block park covers approximately 1,000 feet, with a width of 66 feet.

4.1.1. Transportation Functionality

4.1.1.1. Walking

Pedestrian pathways in the park vary from standard 11-foot sidewalks to 31-foot sidewalks along the “park” portion of the right of way. Pedestrians may access the park via intersections with other arterials, alleyways, or directly from adjacent buildings. Crosswalks spanning Bell Street measure at just 17 feet, facilitating more comfortable crossings for pedestrians. Further, stretches of pavement between the travel way and sidewalk are unimpeded by curbs, allowing for convenient midblock crossings for pedestrians. Despite these features, there were very few observed midblock crossings during the site visit, and pedestrians mostly kept to the edge of the right of way. During the traveler count, 444 pedestrians traveled through the Bell Street and Third Avenue intersection between 12:00 PM and 12:30 PM. Pedestrian usage of the park increased considerably during the lunch hour.



Figure 2. Pedestrians are able to cross midblock

4.1.1.2. Bicycling

Anywhere from 5 to 10 bike racks are provided along each block of the park, with a total 30 bike racks along the extent of the four block corridor. During the site visit, none of the bike racks were in use. Bicyclists are expected to ride in the multi-use travel way along with automobiles. Section diagrams for the park designate 4 feet of the travel way for bicycle use, however, there are no markings on the roadway itself to indicate this separation. During the traveler count, 8 bicyclists traveled down Bell Street between 12:00 PM and 12:30 PM. Several bicyclists who traveled alongside automobiles elicited negative reactions from drivers, including honking and shouts of “get out of the way!” and other more colorful phrases. There appeared to be some confusion as to how the two modes should operate in the same space simultaneously.



Figure 3. Bike racks allow bicyclists to conveniently access the park

4.1.1.3. Transit

Three bus stops are located within a block of the park, two along Third Avenue and one on Second Avenue. King County Metro provides service between Belltown and the greater Seattle

area, including downtown, via the high frequency Rapid Ride and other Metro routes. Some bus routes actually traverse the park as part of their routing, however, they do not stop along the park.

4.1.1.4. Driving

Automobiles may access the Bell Street Park from each of the signal-controlled arterial intersections. Once on Bell Street, the automobile must navigate a southbound one-way 13-foot travel lane. There are 15 paid on-street parking spaces along the park, as well as 3 passenger loading zones. Two small surface lots are located adjacent to the park on the block between Third Avenue and Fourth Avenue. On-street parking is also available along each of the intersecting arterials. During the traveler count, 84 automobiles traveled through the Bell Street and Third Avenue intersection between 12:00 PM and 12:30 PM. Observed vehicle speeds appeared to decrease as automobiles turned onto Bell Street from the intersecting arterials.



Figure 4. The travel way includes subtle curves to reduce traffic speeds

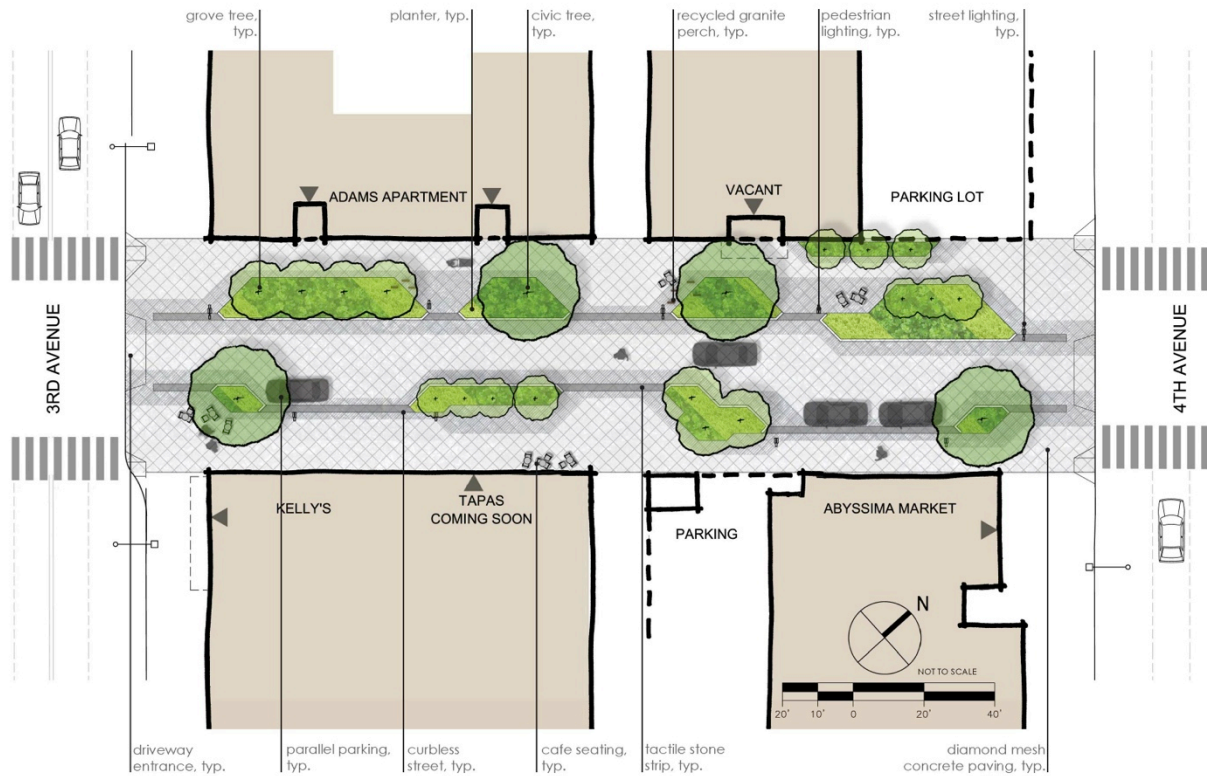


Figure 5. Bell Street Park Plan Diagram

4.1.2. Design

The 66 foot right of way is designed with wide pedestrian pathways occupying over half of the available space. Much of the previous on-street parking has been converted to extra pedestrian space or rain gardens. Several different types of paving are featured in the park, including poured concrete on the sidewalks and travel way and darker, grooved paving in the transition area between the sidewalk and travel way. In lieu of a curb, concrete rumble strips are installed where the sidewalk meets the travel way. The subtle difference in pavement coloring/texture and the rumble strips help visually impaired pedestrians safely navigate the park, while still ensuring that the space appears to be continuous from wall to wall.



Figure 6. Textured paving informs visually impaired users that they are approaching the travel way

Rain gardens are installed along the extent of the park, featuring a variety of vegetation. Sixty-five trees are planted in the 32 rain gardens along the corridor, ranging from 15 to 75 feet in height. When fully grown, these trees will provide extensive shade and enclosure for pedestrians. The permeable surface provided by the rain gardens improves the storm water runoff along the corridor. The rain gardens also serve as a protective buffer space between pedestrians and the travel way. While the rain gardens are a key piece of the parkscape, they are inaccessible for pedestrians – each is roped off with wiring. Large flowerpots are installed throughout the corridor to enhance the aesthetics of the surroundings while providing additional protection for pedestrians.



Figure 7. Rain gardens capture storm runoff and provide a buffer between the sidewalk and travel way

The entire Belltown neighborhood is in the midst of a transition from low- to mid-rise development to mid- to high-rise development. As such, building facades along Bell Street range from 1- to 14-stories tall. More recent mixed-use development along the corridor is in the 5- to 8-story range, which will eventually be the norm along the Bell Street Park. Many buildings abutting the park have entrances located on side streets rather than along Bell Street. This creates some stretches of blank facades across long portions of the building frontage. Where entrances front Bell Street, doorways are located immediately along the street frontage, with little to no transition zone between the public and private realm. Some of the apartment complexes along the street have entry gates abutting the sidewalk, with access available only to those with keys or permission from residents.



Figure 8. Recent development in Belltown has brought higher densities to the neighborhood

The right of way is devoid of on-street markings and excessive signage, true to the principles of shared space. However, aside from the change in physical streetscape features, there is no indication that a user is entering a shared space environment.

4.1.2.1. Amenities

Street furniture is provided along the corridor, with 20 tables and 59 chairs dispersed evenly throughout the park. The metal table and chair sets are a variety of bright colors, a striking visual contrast against their concrete and brick surroundings. While chained to the table, the chairs are movable, allowing for users to customize their seating arrangement. Additional seating is available on small stone blocks scattered along the park. These blocks are also strategically placed to serve as partial barriers between the travel way and sidewalk when no other barrier exists. Lighting is provided in the form of approximately 5 LED street lights and 10 pedestrian

lighting fixtures per block, improving the ambient light along the corridor compared to the previous arrangement (City of Seattle Parks and Recreation). There are 7 trashcans along the corridor, approximately 2 per block. Overall, the area feels very clean - there was no visible trash during the site visit and the lack of utility poles, signage, and electrical boxes noticeably reduces the amount of visual clutter.



Figure 9. Tables and chairs provide formal seating for users to sit and rest or socialize



Figure 10. Small stone blocks provide secondary seating while also protecting pedestrians from the travel way

4.1.3. Activity

Surrounding uses along Bell Street Park vary considerably, ranging from high-density residential development to commercial/office to community service. Several mid- to high-rise apartment buildings front the park, providing high population densities and a large user base within the immediate vicinity of the shared space. Some of the apartment buildings are operated by Catholic Community Services, providing housing to homeless women. Civic and recreation facilities such as the Belltown Community Center and the Regrade Dog Park provide space for community events and public gatherings, helping to generate activity along the streetfront. The park is anchored by two activity centers on either end; to the south, Pier 66 is one of the main cruise terminals along the Seattle waterfront, while South Lake Union is currently transforming

into a major biotechnology and business hub to the north. The Bell Street Park provides an attractive and well-maintained path connecting the two activity centers.



Figure 11. Mid-rise apartment buildings are common along the Bell Street Park

During the site visit, most observed users of the space were in transit, using some stretch of the Bell Street Park to complete their trip. Some users stopped at the café tables and chairs, lingering for a brief period of time before continuing their trip. Despite the provision of the small stone blocks for secondary seating, they were seldom used during the site visit. During the lunch hour, use of the café tables and chairs increased, with individuals and groups congregating to eat or socialize. Overall, very few people were observed standing in the park – the only people using the space for an extended period of time were seated at the café tables and chairs. Activity around the restaurant and retail uses fronting the shared space picked up during the lunch hour as well. Pedestrian activity generally kept to the edges of the street, as few pedestrians ventured into the travel way except to cross the street at the marked intersection crossings.



Figure 12. Typical on-street activity along the Bell Street Park

4.1.4. Experience

Overall, the Bell Street Park was comfortable. Although not continuously used, the frequent placement of the café tables and chairs and stone blocks provided ample opportunities for seating and socializing. The space was well-enclosed by the continuous building facades and newly planted street trees, which will further enhance the enclosure once fully grown. Despite the healthy stream of pedestrians, the sidewalks never felt congested – pedestrian flows measured at 2.5 pedestrians per minute per meter, well within the “comfortable” range recommended by Allan Jacobs. Seating areas were placed far enough away from the sidewalks to provide a place of refuge from traveling pedestrians. The site visit occurred on a clear day and the young trees

provided little protection from the sun. For either sunny or rainy days, additional weather protection could help to enhance the overall comfort level of the space.

The park felt safe, with automobiles traveling at reduced speeds through the shared space. Minor curves in the travel way forced cars to change direction ever so slightly, helping to reduce their speed. The rain gardens and on-street parking provided additional physical barriers between the pedestrian realm and the travel way, further enhancing the sense of safety in the space. During observed instances where pedestrians attempted a midblock crossing, automobiles were traveling slow enough to stop and allow the pedestrian to proceed. However, most pedestrian crossing occurred at marked intersection crosswalks. At the time of this study in April 2014, the Bell Street Park was recently completed. Since accident records are not yet available, further study should investigate before and after accidents reports to see if safety did in fact improve as a result of the shared space implementation.

During the site visit, a Belltown resident stopped and discussed their thoughts on the Bell Street Park. Most of their comments were critical of the park, saying that the new and “sterile” feel to the park did not fit into the grittier character of Belltown. They also went on to say that with the ample seating provided along the extent of the park, it was inviting undesirables to loiter in the area, creating an unpleasant environment for other users. Another comment was made saying that rather than being an amenity for Belltown residents, the park was built as an attractive connector for tourists between the Pier 66 cruise terminal and South Lake Union.

4.2. Case Study #2 – Davis Street – Portland, OR

One of two “festival streets” in the Old Town/Chinatown neighborhood of Portland, the Davis Street festival street was completed in September 2006. Davis Street was initially selected to be repurposed as a festival street as part of the Old Town/Chinatown 3rd and 4th Avenue Streetscape Plan. The plan aimed to “create an urban environment that strengthens the identity of this historic district, foster[] cultural and economic diversity and promote[] a vibrant pedestrian environment for commercial, retail and residential uses.” (City of Portland, 2002). Davis Street and nearby Flanders Street were selected to become shared space streets that could also be temporarily converted to pedestrian-only public space for festivals and other events.



Figure 13. Davis Street Festival Street Section Diagram

Located north of downtown Portland and east of the Pearl District, Davis Street is located in the heart of the Old Town/Chinatown neighborhood. While surrounding neighborhoods have flourished in recent decades, Old Town/Chinatown has not experienced the same levels of investment. As part of an effort to catalyze redevelopment in the neighborhood, the festival street

plan attempted to strike a balance between preserving the historic nature of the district while attracting economic investment without gentrification (Bain, 2012). The public space provided by the festival street serves the surrounding residents while also drawing outside visitors during events.

The Davis Street festival street is situated along a one-block stretch between NW 3rd Avenue and NW 4th Avenue. Four Tri-Met MAX Streetcar stops are located within two blocks of the festival street. Access to East Portland is available via three bridges traversing the Willamette River in close proximity to the festival street. The Waterfront Park Trail is three blocks east of the festival street, providing bicycle and pedestrian access to downtown Portland. A variety of uses are present around Old Town/Chinatown, including residential, retail, and human services. Large surface parking lots are prevalent throughout the neighborhood, providing opportunities for future redevelopment. The festival street itself is 66 feet wide and 260 feet long.



Figure 14. Pedestrian and automobile paths are separated by bollards

4.2.1. Transportation Functionality

4.2.1.1. Walking

Pedestrian activity is concentrated within two 10-foot pathways on either side of the Davis Street right of way. Pedestrians access the space from the intersecting NW 3rd Avenue and NW 4th Avenue sidewalks and abutting buildings. The entire right of way is at grade, lacking any curbs separating the pedestrian pathways and roadway. Similarly, crosswalks are at grade with the adjoining pedestrian pathway, eliminating the need for curb cuts and wheelchair ramps. These features help pedestrians and physically disabled users traverse the space with relative ease. During the site visit, pedestrians mostly kept to the edges of the street, crossing only at the marked crosswalks. During the traveler count, 202 pedestrians traveled through the Davis Street festival street between 12:00 PM and 12:30 PM.



Figure 15. At-grade crossings facilitate pedestrian crossing at the intersections

4.2.1.2. Bicycling

Four bicycle racks are provided along the festival street, two on either side of the street. The racks are located in the pedestrian area, protected from the roadway by bollards. During the site visit, none of the bike racks were in use. Bicyclists utilizing the festival street rode along the side of the roadway, mixed in with automobile traffic. While the majority of the festival street provides ample space for the mixing of bicycles and automobiles, the pinch point caused by the large planters created some problems as bicyclists had little room to navigate by automobiles. During the traveler count, 8 bicyclists traveled through the Davis Street festival street between 12:00 PM and 12:30 PM. Unlike the Bell Street Park site visit, automobiles and bicycles appeared to coexist well in the roadway, perhaps because users have had several more years to acclimate to the new travel arrangement.



Figure 16. Bike racks serve bicyclists while adding extra protection between the pedestrian and automobile realms

4.2.1.3. Transit

Four MAX Streetcar stops are located within several blocks of the festival street, serving the Red, Yellow, Blue, and Green Tri-Met Streetcar lines. Numerous Tri-Met bus lines are also available within a short walk of the festival street. These services connect users of the festival street to downtown Portland, Portland State University, and East Portland.



Figure 17. Drivers must navigate between two planters before entering the festival street

4.2.1.4. Driving

Automobiles may enter the festival street from either side of the festival street along NW 3rd Avenue and NW 4th Avenue. Two-way traffic is permitted along the roadway, resulting in a wider travel way compared to the Bell Street Park, with a width of 26 feet. Paid on-street parking is available on either side of the roadway, with capacity for approximately 12 vehicles. Ample surface parking is available throughout the Old Town/Chinatown neighborhood, including a surface parking lot occupying an entire city block on the west end of the festival street. The on-

street parking was seldom used during the site visit, except for the occasional visitor briefly stopping to pick up takeout from one of the nearby restaurants. During the traveler count, 62 automobiles traveled through the festival street, mostly in the westbound direction.

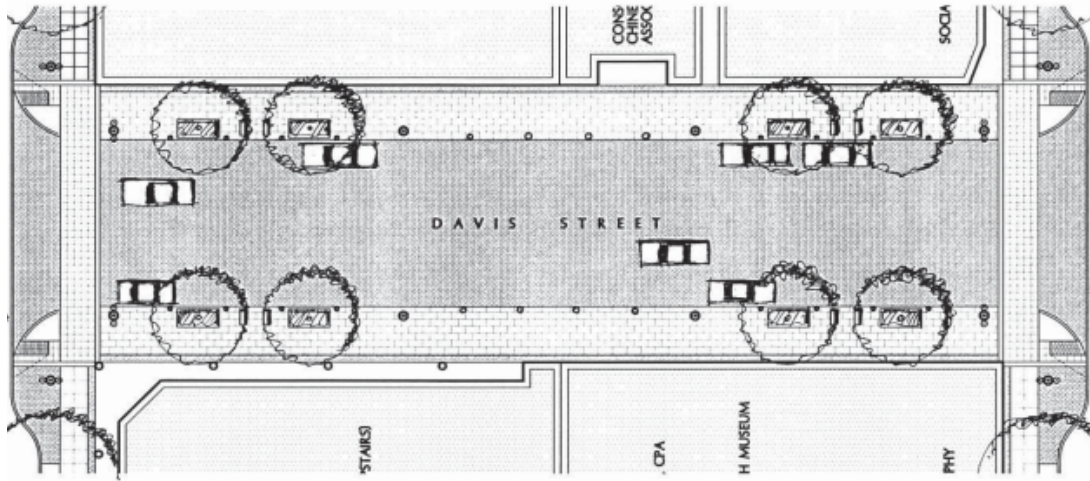


Figure 18. Davis Street Festival Street Plan Diagram

4.2.2. Design

While the 56-foot festival street looks vastly different than the previous iteration of Davis Street, the spatial organization is almost identical. The pedestrian space, on-street parking space, and roadway all measure the same as before the construction of the festival street (Vanderslice, 2007). The majority of the street remains open to automobiles, but the boundary between the pedestrian realm and automobile realm has been blurred substantially. Curbs have been removed entirely, leaving the street at grade across the extent of the right of way. The central “plaza” area is covered with concrete scored to look like 16” square pavers, framed by 8-feet of 16” golden granite pavers. This ground cover style is recalled in the crosswalks with similar scored concrete squares. The coherent paving unifies the space from wall-to-wall and crosswalk-to-crosswalk.

While the flat surface aids maneuvering for wheelchair users, there is a notable lack of detectable warning between the sidewalk and parking land to notify visually impaired pedestrians that they are entering the roadway. Instead, visually impaired users must rely on the bollards or parked cars to indicate when they are nearing the travel way.



Figure 19. Curbless sidewalks are instead lined with granite bollards

Pairs of large 8-foot by 30-foot planters are installed at either end of the festival street to inform drivers that they are entering a special use street. With just 20 feet to navigate between the two gateway planters, drivers must slow down to avoid collisions with the planters or passing vehicles. In addition to their traffic calming effects, the planters also provide seating to users of the festival street and serve as a platform for public art and ornamental vegetation.



Figure 20. Planters mark the entrance to the festival street and provide room for seating and trees

Buildings along Davis Street range from one- to four-stories tall, with continuous facades stretching across the street. Large stretches of building façade were blank, lacking windows or other adornments. Each building has at least one doorway opening out to Davis Street. Despite the presence of doorways, there was little by way of transitional space between the public and private realms. The buildings are designed with a Chinese architectural style, fitting the character of the surrounding neighborhood. Despite the ornamental architecture, the buildings do little to add life to the street, as few people were seen coming and going through their entrances.



Figure 21. Blank facades are common on the festival street

4.2.2.1. Amenities

Minimal street furniture is provided along the festival street. The only permanent seating areas are available on the 20 granite bollards separating the pedestrian pathway from the roadway, and the 4 planters situated along the entrances on either side of the festival street. The bollards are 30” high and 16” square, designed with a polished granite surface to replicate the reflective qualities of water (Vanderslice, 2007).

While at the bollards are the appropriate height for sitting, their location immediately along the parking lanes creates an uncomfortable environment for a potential user. Designed to attach magnetically to the ground, their main



Figure 22. Ornamental streetlight with signage

intent is to protect pedestrians and other street fixtures from wayward traffic. Four streetlights adorned with Chinatown red paint and festive light fixtures are arranged along the block, providing lighting to users while fitting into the design motif of the neighborhood. While there are no trashcans provided along the block, there did not appear to be any issues with litter during

the site visit. During special events, the street can be closed off to automobile traffic, with temporary metal fences protecting pedestrians and redirecting traffic to alternative routes.

4.2.3. Activity

Uses surrounding the festival street include commercial, educational, and residential uses. Mid-rise apartment buildings are located on the northern end of the festival street, providing high population densities to the area. The south end of the festival street is anchored by a restaurant, which draws activity during the lunch hour. Despite the mix of uses, very little human activity was observed coming and going from the buildings. Overall, the mix of uses located along the festival street generated very little by way of on-street activity. Part of this could be attributed to the retail vacancy on the south end of the festival street, as well as the renovations taking place in the apartment building to the north.



Figure 23. Buildings along the festival street share a common ornamental motif

On-street activity largely took the form of people traveling through the festival street – very little lingering was observed. This may have been the norm for that time of day – during the site visit, the author was approached on several occasions and asked “is everything okay?” for merely standing on the festival street for an extended period of time. Building uses located immediately on the festival street did not generate much on-street activity during the site visit, as very few people were observed coming and going through the building entrances. Few building entrances and large blank facades exacerbated this problem, further deactivating the space immediately abutting the buildings. The lack of seating opportunities also discouraged users from lingering on the festival street, as people lacked a designated place to gather. Although placed frequently, the granite bollards did not provide adequate seating for users, especially due to their close proximity to the travel way.

While on-street activity may have been minimal during the weekday site visit, the space may be vastly different during other times of the day or days of the week. The space was designed specifically to host special and temporary events, suggesting that peak activity may occur during events rather than during traditional peak periods for public spaces. Additional observations during special events may provide greater insight as to how the space is used according to its intended design.

4.2.4. Experience

Due to the lack of street trees, seating, and activity from the adjacent buildings, the Davis Street environment was not very comfortable. Without seating, users who wish to linger must stand along a building façade, or sit on the planter boxes at the intersection with the crossing arterials –

not a very pleasant place to sit. The lack of gathering space also reduced the social interaction between users, who quickly passed through the space without stopping. The lack of on-street activity did little to invite greater user interaction with the space. Pedestrian activity measured at just above 1 pedestrian per minute per meter, well within the “comfortable” rate of pedestrian flow.

Overall, the festival street felt safe, with the granite bollards, planter boxes, and on-street parking providing adequate protection from the travel way. Automobile speeds were low coming through the festival street, mostly due to the large planter boxes, which forced drivers to slow while traveling through. There were significant breaks in traffic allowing for users to cross comfortably from one side to the other at any location along the block. In the years since the festival street was constructed, there have not been any vehicle-pedestrian accidents (Vanderslice, 2007).

The relatively low level of human and building activity and lack of amenities created a rather uninteresting space. Despite the ornamental architectural style, little visual variety was provided along the building facades and streetscape, reducing the overall visual stimulation of the space.

4.3. Case Study #3 – Santana Row Promenade – San Jose, CA

Santana Row is a high-end mixed-use urban village development located 3 miles southwest from downtown San Jose. Opened in 2002, Santana Row is one of Urban Villages Growth Areas designated in the San Jose 2040 General Plan. These Urban Village areas are intended to be the primary recipients of San Jose housing and employment growth in the coming decades, while organizing new development around high-density pedestrian-, bicycle-, and transit-friendly centers (City of San Jose Planning, Buildings and Code Enforcement). Located on the site of a former suburban shopping center, the 38-acre Santana Row urban village features a mix of over 520,000 square feet of retail space, 1,200 residential units, 123,000 square feet of office space, hotel, and entertainment uses (Federal Realty Investment Trust). While the site is privately owned, it attempts to reproduce the uses and streetscape amenities typically found in an urban core.

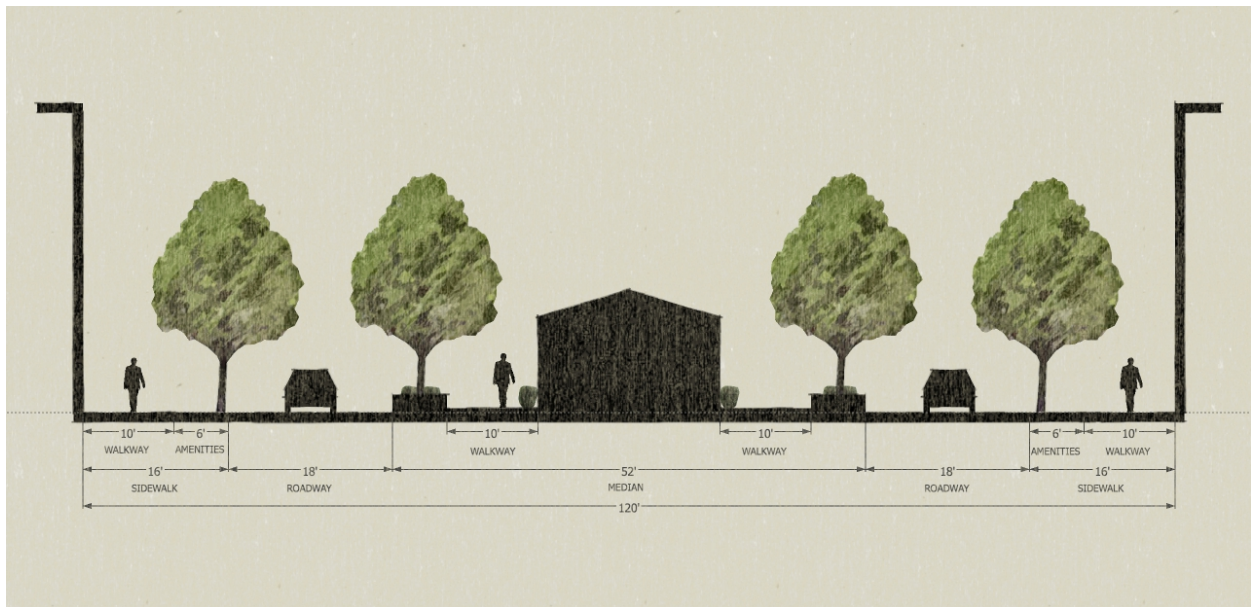


Figure 24. Santana Row Promenade Section Diagram

Designers of Santana Row included a shared space element along a one-block stretch of the central Promenade between Olin Avenue and Olsen Drive. The 450-foot Promenade is the main artery for Santana Row, with shops, restaurants, and condominiums looking out over the central travel way and gathering space. Designed to emulate a European boulevard, the Promenade provides a space for community events while allowing for the mixing of pedestrian and automobile movements.

Santana Row is tucked in between Interstate-280 and Interstate-880, providing automobile access from downtown San Jose and the greater Bay Area. It also lies in close proximity to Winchester Boulevard and Stevens Creek Boulevard, two major arterials running through the western portion of San Jose. Both arterials feature high frequency bus service, with Stevens Creek Boulevard set to receive Bus Rapid Transit beginning in 2019 (Santa Clara Valley Transportation Authority). Two Santa Clara Valley Transportation Authority (VTA) bus stops are located within a block of the Santana Row Promenade.

4.3.1. Transportation Functionality

4.3.1.1. Walking

Pedestrian activity along the Santana Row Promenade is concentrated along two 20-foot sidewalks on either side of the street, as well as a 50-foot median in the center of the street.

Pedestrian activity is clustered around storefronts, gathering areas, and major access points such as the entrance to the parking garage. Pedestrians generally used the sidewalks for through travel, while the median, replete with benches and tables, is mostly used for resting and waiting. The outer edge of the sidewalk is at-grade with the travel way, with a concrete rumble strip

separating the sidewalk from the automobile realm. Most of the central median is curbed, with the exception of curb cuts at each of the 6 crosswalks traversing the travel way, as well as a 60-foot at-grade portion located midblock. These marked crosswalks, with neon signs drawing attention to their presence, clearly delineate the pedestrian realm from the automobile realm. During the traveler count, 804 pedestrians walked along the Santana Row Promenade between 12:00 PM and 12:30 PM.



Figure 25. The sidewalk provides room for pedestrian movement and amenities



Figure 26. Marked crosswalks provide pedestrian paths bisecting the entire Promenade

4.3.1.2. Transit

Two VTA stops are located within a block of the Promenade along Winchester Boulevard. The stops are served by VTA Route 60, connecting the Promenade to Caltrain and VTA light rail stations. Two blocks north of the Promenade, visitors can access VTA Routes 23 and 323 serving downtown San Jose via Stevens Creek Boulevard. These routes will be upgraded to Bus Rapid Transit by 2019, providing high capacity transit access to the Promenade area. No transit service operates directly through the Promenade.

4.3.1.3. Bicycling

Bicycle amenities were noticeably absent along the Santana Row Promenade. While there are no bike racks provided along the Promenade itself, there is one set of stalls off of Olsen Drive towards the south entrance to the Promenade. No bicyclists were observed riding through the Promenade during the traveler count.

4.3.1.4. Driving

Automobiles traverse the Promenade via two separated one-way travel ways. Automobiles may access the Promenade from the north via Olin Avenue and from the south via Olsen Drive. With no stopping permitted along the Promenade, the 16-foot travel ways are exclusively for throughput. Frequent pedestrian crossings and street furniture located directly against the travel way maintain low vehicle speeds through the Promenade. While there is no on-street parking available along the promenade, ample off-street parking is provided throughout Santana Row. Underground and structured parking garages provide over 4,500 spaces within close proximity to the Promenade. The abundance of parking and proximity to major freeways supports driving as the dominant mode of access to the Promenade and Santana Row as a whole.



Figure 27. Pedestrians walk freely in the roadway



Figure 28. A long stretch of at-grade roadway with uniform paving represents shared space principles

4.3.2. Design

The 120-foot Promenade provides 20 feet of pedestrian space on both sides for pedestrian movement and street furniture, two one-way 16-foot roadways for vehicle movement, and one 50 foot center median for pedestrian activity and social gathering. The central median contains a large gathering space for public events and socializing. The median has a low wall separating the pedestrian space from the travel way, providing additional protection to pedestrians, but reducing the permeability between the various travel ways. A variety of ground cover is used throughout the promenade. Bricks adorn the pedestrian areas, while concrete pavers are laid into the travel way to mark pedestrian crossing areas. The rest of the travel way is covered in smooth asphalt, a departure from shared space principles where paving is consistent from wall to wall. The travel way is mostly curbless, except for a few stretches where red curb marks emergency vehicle



Figure 29. Tactile warning strips separate the at-grade roadway from the adjacent sidewalk

parking areas, again, another departure from shared space principles. Some midblock crosswalks are marked, along with neon yellow signage to call out crossing locations. Bollards are spaced frequently along the sidewalk, particularly near crossing areas, separating the pedestrian realm from the automobile realm. Where the travel way is curbless, concrete rumble strips separate the travel way from the sidewalk to warn visually impaired users that they are entering the automobile realm. Planter beds with Santana Row signage welcome travelers accessing either end of the Promenade.

Building facades are consistent across the entire extent of the Promenade, with four-story (first floor retail, upper floor residential) mixed-use buildings being the prevailing land use. Each building is a slight variation on the same architectural theme, with an overabundance of architectural detail provided on building facades. Facades feature narrow first floor storefronts and many doorways out to the street, as well as large display windows in every storefront. Upper



Figure 31. Ground level retail invites in users with frequent doorways and large window displays.



Figure 30. The central median provides a space for users to sit away from the retail store frontages



Figure 32. Decorative planting welcomes users to the Promenade

story residential units have windows that look down onto the Promenade. Building entrances are set back slightly from the sidewalk, allowing for users to enter and exit the building and look through the windows without obstructing traveling pedestrians. The façade is continuous, with breaks only for entrances to the off-street parking garage and courtyard entrance to an adjacent apartment complex.

4.3.2.1. Amenities

Seating is plentiful along the Promenade. On the sidewalks, tables and chairs are provided in outdoor dining areas for restaurants and eateries fronting the Promenade. The dining areas are immediately against the roadway, with a low fence protecting patrons from nearby automobiles. Seating intended for lingering is provided in the central median, in the form of dispersed benches and an outdoor “living room” with more comfortable tables and chairs ideal for long term stays.



Figure 33. Streetlights with hanging baskets enhance the aesthetics of the Promenade

The variety of seating available on the Promenade caters to users of all different purposes. Ornamental lighting fixtures are provided throughout the Promenade.

The entire Promenade is lush with vegetation, with spruce trees placed in planter beds frequently alongside both travel ways. Planter boxes with shrubs and flowers are prominent along the Promenade, in addition to hanging plants attached to the streetlights. A large fully-grown tree is located on the northern end of the median, towering over the outdoor living room and providing a green backdrop to the entire streetscape.

4.3.3. Activity

Uses immediately surrounding the Promenade are primarily retail and residential, with four-story mixed-use development straddling either side of the Promenade. The high population density provides support for the merchants along the Promenade, while also generating significant activity on the street below. As both a place of significant residential density and destination for regional shopping, the Promenade experiences high levels of activity sustained by locals and visitors alike.



Figure 34. Sidewalks are wide enough to allow for outdoor dining alongside traveling pedestrians



Figure 35. The central median provides space for special events

On-street activity is vibrant along the Promenade, with a diverse set of activities taking place throughout the day. Shoppers are constantly coming and going through storefronts, diners sit in the outdoor seating areas in front of restaurants, and leisurely strollers walk along the Promenade while taking breaks to rest on one of the many provided benches. The location of outdoor restaurant seating areas across the sidewalk from building entrances inject more life to the sidewalk by generating cross-traffic from customers and restaurant workers. Special events draw attention and activity to the median, while encouraging pedestrians to cross the travel way at will. The bustle of street life along the Promenade is akin to that found in more heavily urbanized areas, and has effectively been reproduced in a formerly suburban setting.



Figure 36. The Promenade is lined with four-story mixed use buildings

4.3.4. Experience

Due to the constant on-street activity, strong relationship between street activities and building activities, tree lined street, and provision of abundant amenities, the Promenade is an extremely pleasant place to be. Despite the high rates of pedestrians, the crowds did not feel overwhelming, perhaps because people were able to walk in the travel way or median rather than stay constrained to the edges of the Promenade. The numerous seating options and extensive tree canopy provided ample shade along the entire extent of the Promenade, creating a pleasant environment to walk around as well as linger. The architectural style of the buildings were flush with visual interest, and more detailed features such as colonnades, flower boxes, and fountains provided constant visual stimulation on top of the already active street life.

5. CASE STUDIES EVALUATION

The following chapter critiques each of the case studies based on the identified criteria for successful public spaces. The case studies are scored for how well they fulfill each criterion, as well as how well they strive to meet the principles of shared space as they pertain to a particular criteria. Scores range from 1 (poor) to 5 (excellent). A “poor” score indicates that the case study fails to meet any of the shared space or public space best practices criteria established in the literature review. An “average” score of 3 indicates that some of the shared space and public space criteria are met. An “excellent” score indicates that most if not all of the criteria for shared space and public space are fulfilled. Scores were derived from observations recorded during the site visits.

5.1. Transportation Functionality

	Bell Street Park	Davis Street Festival Street	Santana Row Promenade
Transportation			
Walking	5	4	5
Bicycling	4	4	1
Transit	4	3	2
Driving	5	5	4

Figure 37. Transportation Functionality Evaluation

Walking is effectively supported in each of the three case studies. With sidewalk widths measuring above 10 feet for each case study, wide sidewalks provide ample space for both moving and sojourning pedestrians alike, preventing the walkways from feeling congested. The spaces are easily accessible for pedestrians, with frequent entryways from abutting uses and short blocks for convenient access from intersecting streets. Roadways are narrow and easy to cross –

the widest is just 26 feet across – allowing for frequent crossings along the entire extent of the roadway. Even the Santana Row Promenade, easily the widest of the three case studies, is easy to cross due to the central median breaking up the roadway. Generally, pedestrian amenities are abundant and well placed, with the exception of the Davis Street Festival Street, which is devoid of seating opportunities.

Bicycling is accommodated fairly well along the Bell Street Park and Davis Street Festival Street. Both areas encourage biking in the roadway, with cyclists riding in mixed flow traffic with automobiles. Both sites also provide ample bike racks, especially the Bell Street Park, which has several racks at every intersection. Perhaps due to its location away from major transportation corridors, the Santana Row Promenade does not appear to be a destination for bicyclists. The bike racks that are provided are located far away from the Promenade itself. Not surprisingly, no bicyclists were observed during the site visit.

Transit is not immediately present in any of the shared space case studies. However, Bell Street Park intersects several major transit corridors, with Rapid Ride bus stops just steps away from the shared space. The Davis Street Festival Street is just a couple of blocks away from high quality Tri-Met streetcar service, but access is not as convenient as it is along Bell Street Park. The Santana Row Promenade is even further away from transit service, with the entire Santana Row development located with its back facing major VTA transit corridors.

Automobiles are well integrated into each of the case studies, with automobile access being maintained without allowing vehicles to dominate the street. Vehicle speeds are kept low through

each of the three case studies, and the movement of automobiles was not stifled by the prominence of other travel modes on the streets. On-street parking is readily available on Bell Street Park and the Davis Street Festival Street, but is lacking at the Santana Row Promenade. However, the latter does have several large parking structures, which are well hidden away from street view but still within close walking distance of the Promenade.

5.2. Design

	Bell Street Park	Davis Street Festival Street	Santana Row Promenade
Design			
Size	5	5	5
Edges	3	2	5
Facades	4	3	4
Materials	5	4	4
Amenities	5	2	5

Figure 38. Design Evaluation

Bell Street Park and the Davis Street Festival Street both have continuous building frontages and are small in size, providing a strong sense of enclosure for pedestrians. Although significantly wider, the Santana Row Promenade also has a good sense of enclosure due to the tall building frontages, central median, and tree lined streets. Building facades are most interesting along Bell Street Park and the Santana Row Promenade, with frequent doorways, large windows, and few blank walls drawing visual interest and activity to the building frontage. At both locations, users are drawn to the edges due to the strong permeability between the street and the adjacent buildings. At the Davis Street Festival Street, buildings are less integrated with the streetscape, creating some disconnect between building activity and on-street activity along the street edges. The ornamental architectural features on Davis Street and more detailed façade adornments on

Bell Street and the Promenade contribute to the visual interest at all three locations. All three locations feature high quality and distinct materials along their sidewalks and roadways. True to shared space principles, Bell Street Park and Davis Street each have uniform paving from wall to wall, while the Promenade only has unique paving along the sidewalks and median, with regular asphalt used on the roadway.

Bell Street Park and the Santana Row Promenade both provide excellent amenities for their users. Plenty of seating encourages lingering and gathering for pedestrians, frequently placed lampposts provide good lighting at night, and the planting of trees, shrubs, and flowers dramatically enhance the space. The Promenade, in particular, benefits from lush greenery provided along the extent of the street. Davis Street, on the other hand, lacks many basic pedestrian amenities. Seating and trees are provided only on the planters at the ends of the street, leaving much of the shared space without greenery or places to sit. The lack of trees on Davis Street provided a stark contrast to the lush foliage of Bell Street Park and the Santana Row Promenade.

5.3. Activity

	Bell Street Park	Davis Street Festival Street	Santana Row Promenade
Activity			
Adjacent Uses	5	2	5
On-Street Activities	4	1	5
Density	5	2	5

Figure 39. Activity Evaluation

The Bell Street Park and Santana Row Promenade both benefit from a great variety of adjacent uses. Both have a mix of retail, entertainment, office, outdoor recreational, and most importantly, residential uses, immediately near their shared spaces. These population densities are critical to maintaining a constant level of activity on the street at all hours of the day. It is interesting to note that both locations benefit from a robust set of adjacent uses, but both came to be in much different ways – Bell Street Park was constructed in a pre-established neighborhood, while the Promenade was built from scratch along with its surrounding uses. Uses abutting the Davis Street Festival Streets are not as vibrant, as they mostly consist of restaurants and retail, which are heavily dependent on daytime activity. Residential uses are not as prominent along Davis Street as they are at the other case study locations, lowering the overall population density in close vicinity to the festival street.

On-street activity is most vibrant at Bell Street Park and the Santana Row Promenade, mostly due to the mix of activities housed in the abutting buildings. The constant coming and going between the street and apartment buildings, stores, restaurants, and offices instill life onto the street. In addition to the constant movement occurring on the street, the opportunities for people to linger are plentiful with the number of chairs, tables, and benches provided along these two

locations. The pleasant tree lined streets and abundant amenities also encouraged longer durations of stay. Conversely, the lack of pedestrian amenities and active adjacent uses along the Davis Street Festival Street greatly reduce the amount of street level activity. Although the street is bustling with activity when it is shut down for special events, under normal day-to-day circumstances, it is devoid of activity. While the street is a functional transportation corridor, the lack of a vibrant public life is contrary to the objectives of shared space.

5.4. User Experience

	Bell Street Park	Davis Street Festival Street	Santana Row Promenade
User Experience			
Comfort	5	2	5
Safety	5	5	5
Interest	4	2	5

Figure 40. User Experience Evaluation

Due to the constant stream of activity and abundance of amenities, both Bell Street Park and the Santana Row Promenade are very comfortable. The amenities, particularly the trees, create a very pleasant environment for users while providing shade during sunny days. Tired pedestrians can rest at will at any variety of benches or chairs. The constant activity and vibrancy of these streets sustains continual visual interest. Davis Street, however, is hindered by its lack of amenities, as the space feels barren for users. Here, pedestrians cannot take refuge from the sun, or stop to sit if they need a moment of rest. Without these amenities, pedestrians do not linger on the street, reducing on street activity and overall visual interest on the street. All three locations feel safe, as vehicles travel at low speeds, allowing pedestrians to cross at will and avoid potential catastrophic accidents.

6. LESSONS LEARNED

The evaluation of the three case studies reveals what is working and what is not in American examples of shared space. On the face of it, the design of the American shared spaces fulfills the general criteria set forth by shared space principles. Generally, signage is minimal, paving is uniform across the extent of the street, and sidewalks are curbless to blend the pedestrian realm with the automobile realm. Where the American shared space examples differ is their application – the three case studies are vastly different due to their application in three different urban contexts. This finding suggests that the location and surrounding uses play a role in how the space is used beyond the basic principles of a shared space physical design. Other findings from the evaluation will help to inform future efforts to implement shared space in an American context:

- Wide sidewalks at least 10 feet in width provide enough room for heightened foot traffic. Additional sidewalk space should be considered for street furniture and other amenities.
- Unmarked midblock crossings are seldom used compared to marked crosswalks at intersections, as people tend to gravitate towards clearly marked pathways.
- Bicycle racks should be installed to encourage bicycling to and through the shared space.
- Traffic calming measures such as planter boxes and other visual and physical obstructions should be employed to maintain low speeds of automobile traffic.
- Narrow roadways help to keep traffic speeds low while providing human scale comfort to pedestrians.
- At all three sites, intersections were still controlled by either stop signs or traffic signals. These controls allow the space to control its users, rather than the other way around, as

preferred by shared space principles. Where appropriate, these should be considered for removal to further the objectives of shared space in each case study.

- Parking should be carefully considered in a shared space setting. On-street parking provides convenient access to drivers at a cost to pedestrians by extending the width of the roadway, thus discouraging crossing. The benefits of utilizing on-street parking as an additional buffer between the sidewalk and roadway are marginal on a street with low traffic speeds. Further, the presence of several parked cars detract from the visual interest of the streetscape. Well-hidden off-street parking – as applied at Santana Row – should be prioritized to maintain access for vehicles without negatively impacting street life.
- The narrow street width (less than 72 feet) and mid-rise building facades (three to six stories) provided a good sense of enclosure.
- On-street activity was most vibrant where ground level building fronts invited activity in from the street, with frequent doorways, large windows, and some outdoor amenities creating a “soft edge” between the public and private realm.
- Stretches of the shared spaces with blank facades were devoid of activity – these should be avoided.
- Facades with architectural detail did not necessarily garner visual interest (per the Davis Street case study) – the activities generated by the buildings are more important for maintaining a lively street life.
- Amenities contribute significantly to the feel of the space. Seating, in particular, successfully helped to maintain street level activity. Benches and chairs should be plentiful in order to encourage longer stays.

- The importance of trees is highlighted in the contrast between the Santana Row Promenade and Davis Street case studies - they should be planted where appropriate to enhance comfort and enclosure.
- Shared space design features provide a platform for active public space, but surrounding uses are integral to the vibrancy of the space, as they inject life into shared space. Surrounding uses should be mixed to draw activity during all hours of the day and all days of the week.
- High residential densities nearby the shared space provide a constant (24/7) base level of activity within the space, while destination-based uses such as shopping and entertainment uses draw in users from elsewhere.
- On-street activity consisted of either people in transit or patrons of nearby restaurants utilizing outdoor seating areas. An emphasis on incorporating more civic and community uses may encourage more people to use the space for general socializing and gathering.
- On-street programming can help to encourage activity by activating the public space – the event held at the Santana Row Promenade during the site visit drew additional visitors who may have not been there otherwise.
- Comfort can be enhanced by the provision of amenities, which provide places to sit and rest, protection from shade and rain, separation from vehicle traffic, and a sense of enclosure.
- Visual interest can be enhanced primarily by increased activity, while physical design features play a secondary role in creating a visually stimulating environment.

Some combination of these lessons is necessary to ensure that shared spaces are lively public spaces. Particular attention should be given to where shared space can be applied, since different treatments are appropriate for different urban settings.

6.1. Further Study

In future examinations of shared space in the United States, a greater variety of case studies should be examined. Other examples of shared space could further illuminate successful features of shared space in America. One such example is Palmer Street in Cambridge, MA, a shared space constructed right off of Harvard Square in 2008. At about 20 feet wide, this space is considerably smaller than those examined in this study, and may reveal different impacts of the shared space strategy. While this study focused on the use of space during a



Figure 41. Palmer Street in Cambridge, MA

typical weekday, additional site visits should be conducted in morning, evening, and weekend hours to observe how the use of the space transforms during different time periods. Further, user surveys could help to provide a greater depth of analysis pertaining to the experiential aspect of this type of study. A survey of planning and design professionals could also help to further the depth of the study.

SOURCES

- Bain, L. (2012). *Living Streets: Strategies for Crafting Public Space*. Hoboken, NJ: John Wiley & Sons.
- Barnett, J. (2011). *City Design: Modernist, Traditional, Green and Systems Perspectives*. New York: Routledge.
- Burton, E. & Mitchell, L. (2006). *Inclusive Urban Design: Streets for Life*. Oxford: Architectural Press.
- City of Portland. (2002). *3rd & 4th Avenue Streetscape Plan*.
- City of San Jose Planning, Building and Code Enforcement. Urban Village FAQ's. Retrieved May 10, 2014, from <http://www.sanjoseca.gov/index.aspx?NID=3891>
- City of Seattle Parks and Recreation. Bell Street Park Parks and Green Spaces Levy Project Information. Retrieved May 10, 2014, from http://www.seattle.gov/parks/projects/bell_street/boulevard_park.htm
- City of Seattle Department of Transportation. Right-of-Way Improvements Manual. Retrieved May 10, 2014, from http://www.seattle.gov/transportation/rowmanual/manual/6_2.asp#623
- Federal Realty Investment Trust. Santana Row. Retrieved May 10, 2014, from <http://www.federalrealty.com/properties/santanarow/>
- Fryslân Province. (2005). *Shared Space: Room for everyone*.
- Gehl, J. (1980). *Life Between Buildings: Using Public Space*. New York: Van Nostrand Reinhold.
- Grant, J. (2006). *Planning the Good Community: New Urbanism in Theory and Practice*. New York: Routledge.
- Great Britain Department for Transportation. (2011). *Shared space*. London: Stationery Office.
- Hamilton-Baillie, Ben. (2008). *Shared Space: Reconciling People, Places and Traffic*. *Built Environment*.
- Jacobs, A. (2011). *The Good City: Reflections and Imaginations*. New York: Routledge.
- Jacobs, A. (1993). *Great Streets*. Cambridge: The MIT Press.
- Jacobs, J. (1961). *The Death and Life of Great American Cities*. New York: Vintage Books.
- Lynch, K. (1960). *The Image of the City*. Cambridge: The MIT Press.

Santa Clara Valley Transportation Authority. Stevens Creek BRT Project. Retrieved May 10, 2014, from <http://www.vta.org/stevens-creek-brt>

Speck, J. (2012). *Walkable City: How Downtown Can Save America, One Step at a Time*. New York: North Point Press.

Teaford, J. (1986). *The Twentieth-Century American City*. Baltimore: The Johns Hopkins University Press.

TRL Limited. (2003). *Review of 20 mph Zones in London Boroughs*. Retrieved May 10, 2014, from <http://www.tfl.gov.uk/cdn/static/cms/documents/review-of-20mph-zones-in-london-boroughs-full-report.pdf>

Vanderslice, E. (2007). *Portland's Chinatown Festival Streets*. Retrieved May 10, 2014, from <http://www.ite.org/Membersonly/annualmeeting/2007/AB07H5403.pdf>