ITE

Micromobility Sandbox Design Competition

Shape the Future of the Urban Landscape

APRIL 19, 2020

Stantec

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INTRODUCTION

DESIGNING A CONNECTED NETWORK

Transportation networks are comprised of several layers that interact with each other to provide a network for moving around the community and accessing businesses, homes, parks and institutions. In its deepest form, transportation networks integrate with land use and urban design at street-level to balance a community's vision and objectives. These pieces of transportation infrastructure are just as much public spaces where the community meets and interacts, as well as essential networks that move people and goods safely and efficiently.

Today, there are several mobility options at our fingertips that allow us to pick and choose how to get around. The barriers between different transportation modes are increasingly blurred as they become more integrated. Streets are no longer just for automobiles, but rather, a mixture of mobility options to serve diverse needs.

Micromobility—dockless bicycle, e-scooter sharing services, and personal mobility devices—have burst onto the scene, offering people a new, exciting, and convenient mode of transportation for navigating their communities. However, with it comes a variety of challenges and questions: is micromobility merely a trend? Where does it fit in? Will micromobility evolve to become an integral part of our mobility networks?

While we don't have answers for all of these, they provide the underlying context upon which our team began to answer the most important question: **how do we, as transportation planners and engineers, plan and design for these new modes?**

At Stantec, we understand the personal relationship that a community may have with transportation. Whether it is scooting to work, or biking to a doctor's appointment, it is important to understand the qualitative human components as well as the physical quantitative aspects of our mobility networks to create solutions that are moulded rather than imposed on the local context. We call our approach **Designing with Community in Mind**.

GUIDING PRINCIPLES

Our goal was to create a design that connects people with their community intuitively to expand upon guiding industry principles that have defined transportation planning over the past few years:

- Complete Streets
- Vision Zero
- Safety Through Design
- Mobility-as-a-Service (MaaS)

Our team focused on developing a design solution that can equitably, flexibly and dynamically accommodate all roadway users to create a platform upon which the mobility solutions of the future – regardless of form, function, speed or size – may move about within the urban context. At its core the design we present within this submission is grounded in the following guiding principles:

1. **Design for the micromobility user:** The micromobility user has unique needs within the right-of-way that dictate where they are most likely to operate and feel safe. Acquiring, using, and parking a micromobility vehicle must be safe, comfortable, and intuitive—both for the micromobility user as well as others operating in the right of way, especially those with special needs.
2. **Design for the micromobility operator:** Micromobility, particularly shared-use micromobility, has operational needs distinct from traditional modes of operation. The current, typical right-of-way in cities across the United States is ill-prepared for these operations—which means there is ample opportunity to improve. Deployment, rebalancing, and charging all should be accounted for—with an eye towards the future of the industry, of course.
3. **Above all, design for the safety of all users:** Safety first, safety last, and safety everywhere in between. A design in which users of the roadways feel unsafe, whether automobile, micromobility, or pedestrian, is an incomplete design. Complete Streets principles are the bedrock of designing for micromobility, and they are reflected herein.

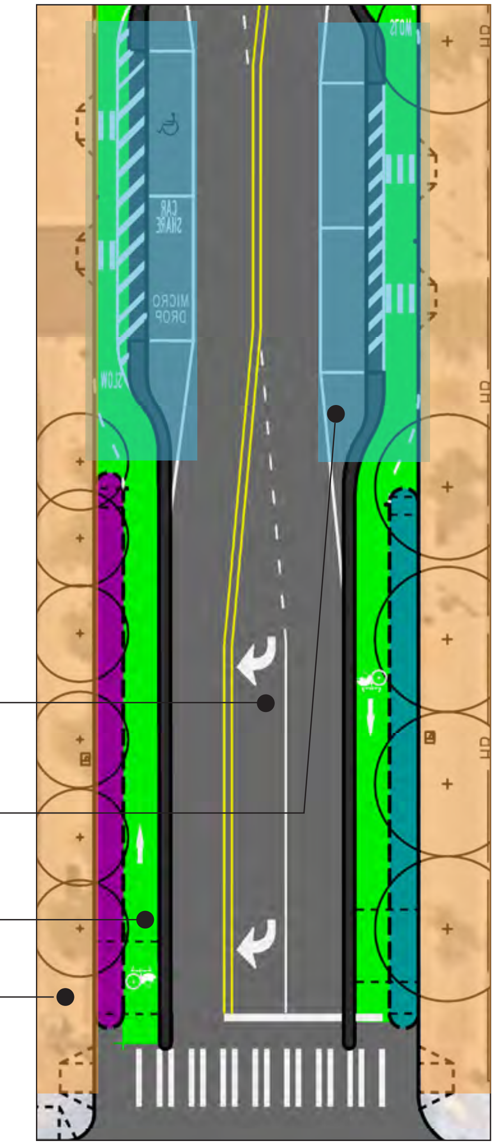
CONCEPT & INNOVATION

DESIGNING A CONNECTED NETWORK

Innovations in transportation technology, now more than ever, have urban streets teeming with activity, both in the roadway and at the curbside. Shared-use micromobility is capable of operation in both of these spaces, which makes users feel more safe. At the same time, it increases the potential for conflicts with both automobiles and pedestrians alike.

The design embraces e-scooters as another exciting element of the ever-evolving Micromobility space. With the advent of this nascent technology, many municipalities have been forced to evaluate where micromobility vehicles should operate within the right-of-way. Our design relies on the industry-wide consensus that the active transportation lane between the curb, commonly referred to as the bicycle lane, is the proper location for micromobility users. To facilitate usage of this space, and make doing so intuitive to the user, our design leans on behavioral economics to guide user behavior, integrating several features to enhance safety at intermodal conflict points by grade separating portions of the right-of-way between four Zones:

- **Vehicular Zone:** Otherwise a general vehicular travel lane, the vehicular zone includes easy access to dedicated parking, deployment, and rebalancing zones at key locations within the right-of-way for micromobility operators.
- **Transition Zone:** Flexible area that manages the transition zone between vehicles, micromobility, and pedestrians. It also doubles as softscaping for bumpouts and traffic calming.
- **Micromobility Zone:** A dedicated lane for Micromobility travel, the micromobility zone allows for operation and travel in the space between parked vehicles/scooters and the pedestrian zone.
- **Pedestrian Zone:** The final transition between travel and destinations. Dedicated to placemaking and pedestrians.

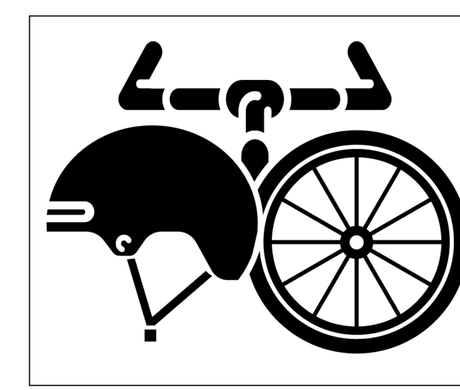


WHAT'S IN A SIGN?

To go along with the concept of a Micromobility lane, we've designed a conceptual logo or signage that could be used along the route to better communicate to roadway users that the Micromobility zone is meant for all forms of Micromobility, not just cyclists. In North America almost all signage to identify bike lanes revolves around an image of a cyclists. While this signage is clearly understandable, it also cuts both ways in that it may create confusion for scooterists as to their permittance. Our conceptual signage identifies the three main characteristics of Micromobility:

- **Helmet:** Symbolizing that micromobility users are vulnerable road users requiring an elevated level of protection,
- **Wheel:** Symbolizing that micromobility is a personal vehicle with a wheel and isn't meant to operate on sidewalks, and
- **Handlebars:** Symbolizing that micromobility often require users to hold onto handlebars to steer.

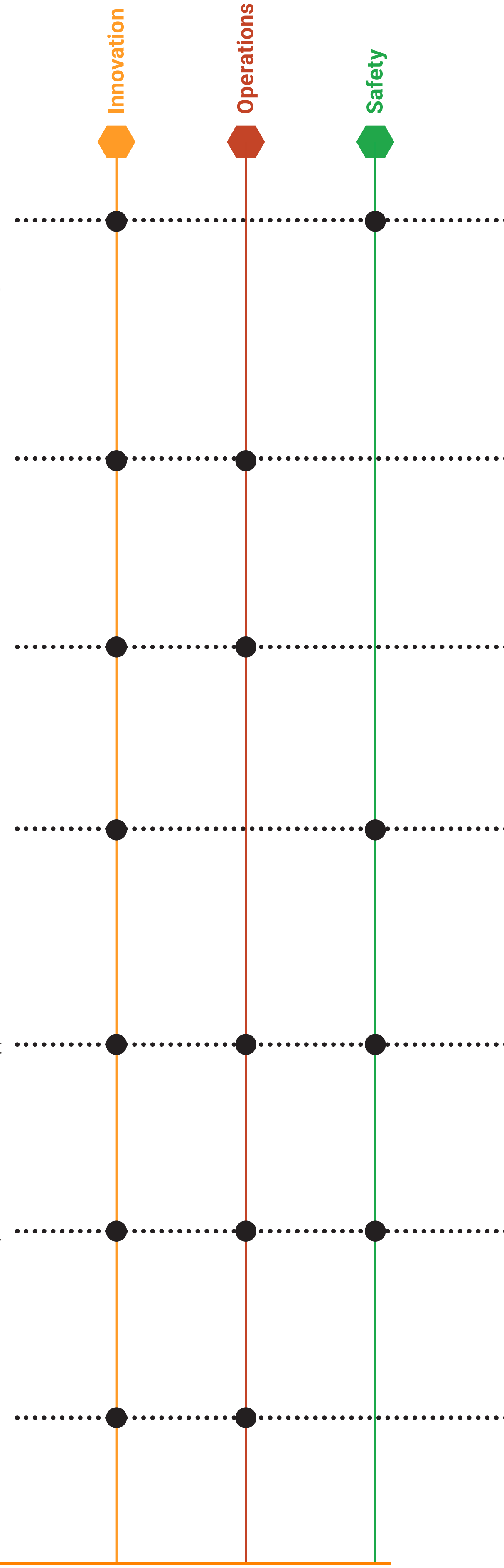
The logo/signage is shown to the right and includes these three main elements to communicate the broader Micromobility function.



KEY INNOVATIVE DESIGN ELEMENTS

The design we present looks to formalize transportation in the 21st century by implementing elements that separate the four mobility zones. Taking the best cues from Complete Streets design, the concept includes:

- **Grade Separated Micromobility Lane:** Micromobility users share similar characteristics to bicyclists and other modes of active transportation. They deserve their own lane. Our design utilizes a 6' micromobility lane, separated both from the automobile lane and the pedestrian zone by three-inch grade separation and rollable curbs, to incentivize users to travel in the appropriate lane. The impact from riding up onto the sidewalk, or down into the automobile lane, redirects the user's attention to the micromobility lane. The 6' lane also provides enough space for current and future Micromobility options.
- **Designated Micromobility Parking:** Micromobility needs a place to park. Our design uses visual cues in the form of colored, permeable pavement separate from the pedestrian zone to instruct both micromobility users and operators on the appropriate location for parking, vehicle deployment, and rebalancing. This sustainable design helps to mitigate environmental impacts and reduce runoff, reduces conflicts between pedestrians and micromobility users, and provides certainty to operators in an easily understandable format.
- **Dynamic Vehicle Parking Zones:** Designing for micromobility doesn't just mean the user and the vehicle; it also means the micromobility operators, and other vulnerable users of our streets. Our design right-sizes parking, creating dynamic vehicle parking zones designed for delivery vehicles, ridehailing operators, and paratransit vehicles for those with special needs. These parking zones are delineated with removable striping so that the can easily be altered as necessary.
- **Parklets:** Micromobility conceives of mobility for people, not just vehicles. Our design utilizes parklets as placemaking features within the streetscape context to carve out space for people to participate in life along the roadway, not merely pass along it. These parklets also serve as visual cues to drivers and act as traffic calming measures, emphasizing the importance of people among place.
- **Greenwave Signal Timing:** Focusing on concepts developed for the most bike-friendly city in the world, Copenhagen, our design aims to extend GreenWave technology to improve facility operations and safety for Micromobility users. GreenWave technology utilizes LED lights embedded in the pavement to inform users within the lane if they can clear the upcoming light at their current speed. As long as the user is within the wave, they will continue to receive green lights at each intersection. The system itself is connected to the traffic signal controller and integrated within the coordination sequence. GreenWave technology mitigates the amount of stops at intersections, the dilemma zone effect, and potential collisions. The journey is ultimately a more comfortable one.
- **Dynamic Chicanes:** Reducing automobile speeds is critical to improving safety for all users, whether real or perceived. Our design utilizes chicanes in the midblock context to calm traffic and provide a safer environment. Dynamic parking spaces with higher utilization create the chicane effect, taking advantage of the corridor's own operations to regulate speed through self-enforcing measures.
- **Multi-Modal Parking Kiosks:** Getting the right number of vehicles in the right place at the right time is critical to micromobility's success, both for cities and operators alike. Our parking kiosks use cutting-edge smart technology, in the form of visual sensors and machine learning, to detect parked scooters within the parking zones and deliver that information to operators and users to effectively plan trips and balance fleets. It's truly smart parking.

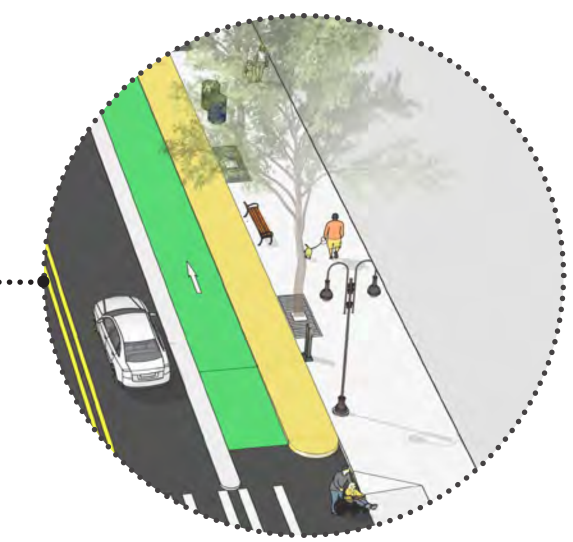


INNOVATIVE DYNAMIC OPERATIONS

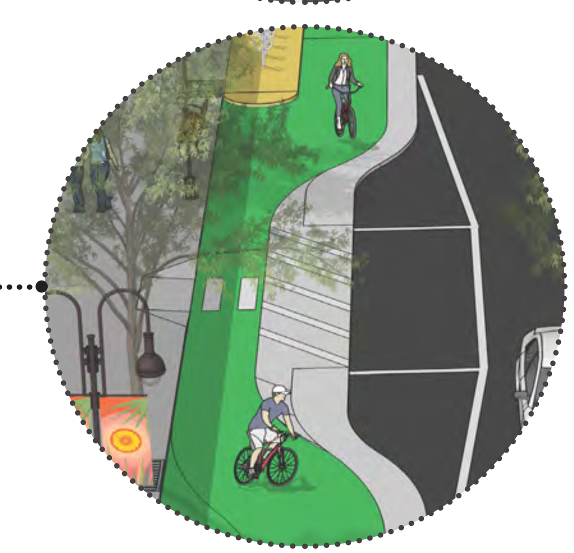
Beyond including innovative design elements, our team has also explored opportunities to enhance operations and safety through a variety of dynimc measures that expand upon complete streets and vision zero principles. We've incorporated measures that allow the coordior to dnymaically change as needed to adapt to changing corridor trends that may see the corridor change operationally by time of day or by day of week supported by a high-quality analytic data that will keep private and municipal operators in the loop as trends change.

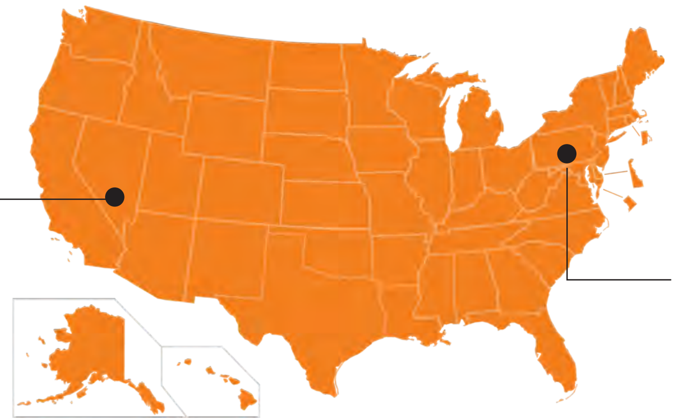
- **Dynamic Micromobility Parking & Curb Management:** The on-street parking spaces are reserved for a multitude of functions and can be changed to adapt to demand. Passenger vehicles can park in designated spaces for a maximum period of 2 hours during peak times. Each space is paid for at one of the kiosks located along the sidewalk. Spaces designated for passenger vehicles are separated from the Micromobility zone by a 3' striped buffer. Additionally, spaces are designated along the corridor for deployment and collection of Micromobility vehicles. Since these stops are relatively short in duration, the maximum time that the space can be occupied is 15 min. These spaces can also be used for car share services such as Uber or Lyft. Spaces meant for vehicle deployment, pickup and drop-off, and accessibility area are separated from the Micromobility zone with a 5' buffer, further shrinking the Micromobility zone down to 4'. This causes Micromobility users to slow down and become aware of those crossing the roadway frequently in large groups, carrying equipment, and in wheelchairs. These spaces area also marked with symbol on the pavement to further distinguish their use. If at any time parking demand changes for different user groups, the buffer space can be restriped to either 3' or 5' and the appropriate pavement symbol can be applied.

- **Leveraging AI for Parking:** One of the pitfalls of e-scooter apps is that they do a great job of letting users know where they can pick-up or drop-off a scooter, but they don't give any indication as to how full a drop-off zone is. "Bike (or Scooter) Litter" is a legitimate concern for municipalities as users navigate to an area and toss their scooters into a pile of other scooters. Our design mitigates this by incorporating visual sensors into adjacent parking pay stations and micromobility kiosks to observe and manage parking demand in the micromobility zone. Through data sharing, use of machine learning and artificial intelligence, operators through their app may automatically inform e-scooter users of parking utilization at each destination so they may dynamically adjust their destination (and operators to re-deploy vehicles) to alternative parking locations. As seen with pilots in Detroit, Charlotte, and Omaha, this may also be coupled with dynamic pricing to influence vehicular and micromobility usage based on demand. The intent is to both provide a tool to empower e-scooter service providers to help mitigate scooter clutter while also providing parking/utilization metrics for municipal staff to assist in transportation planning.



- **You've got mail:** With the increase in online deliveries, freight curbside demand has exploded. These vehicles are often on tight time constraints resulting in vehicles loading/unloading at the curb. Our design includes provisions for micromobility maintenance vehicles that can also be leveraged for freight deliveries within a block. This space could also be adjusted, as needed, to accommodate municipal service vehicles as well streamlining operations.





CORRIDORS

BRIDGER AVENUE | LAS VEGAS, NV

While Las Vegas may be known for casinos, neon lights, and 'The Strip,' in recent years its hot sunny weather and favorable business climate has spurred tremendous population growth and a renewed interest in its downtown. With room to spare in the desert, Las Vegas has built outwards, rather than upwards, a fact reflected in its modest densities relative to other large population centers in the West. At just over 4,000 people per square mile, Las Vegas is typified by its auto-centric development.

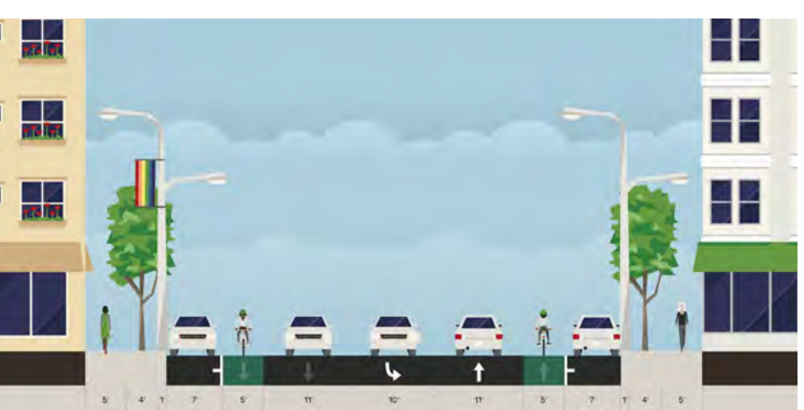
Bridger Avenue reflects this development pattern. Along the corridor between Casino Center and Las Vegas Boulevards, Bridger Avenue's typical cross-section has two 11' travel lanes in opposite directions, separated by an 11' two-way left turn lane running the length of the corridor. Abutting the sidewalk on either side of the right-of-way may be found 7' lanes for on-street parking and right turns, as well as 5' bicycle lanes.

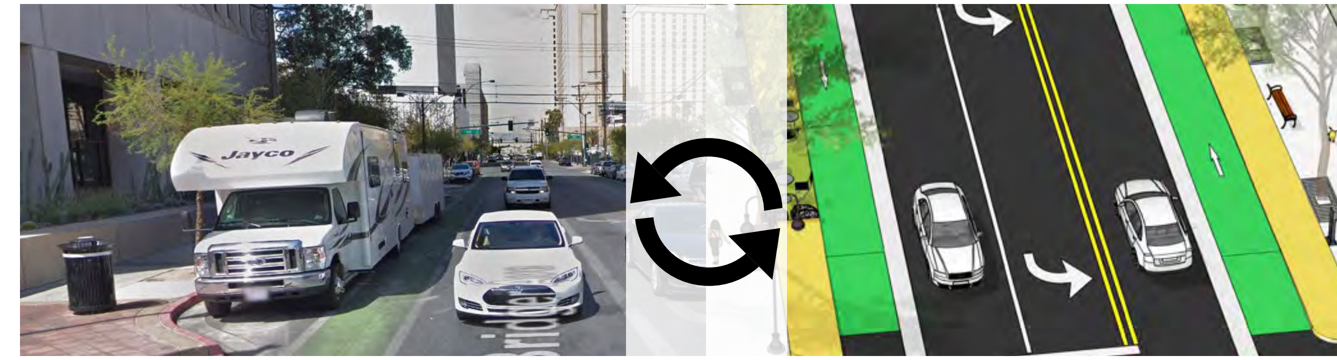
Our team wanted to pick an alternative corridor that was significantly different from Bridger Avenue to push limits on our design's applicability and transferability between two different contexts. A variety of elements, from the difference in weather to infrastructure maintenance requirements relating to snow removal were considered in selecting our alternative candidate corridor.

PASSYUNK AVENUE | PHILADELPHIA, PA

If Las Vegas is the sunny, suburban micromobility paradise in the West, then Passyunk Avenue in Philadelphia is the compact, high-density boiler room for micromobility where ingenuity is born. Philadelphia is among the most dense cities in the United States, at over 12,000 people per square mile which contributes to the 31% of households without a vehicle, in comparison to Las Vegas where 10% of households do not own an automobile. In stark contrast to Las Vegas' year-round warm weather and sunny days, Philadelphia experiences harsh, cold winters and days of snow.

Passyunk Avenue is a major collector in this neighborhood, and our selected corridor, from Morris Street to Dickinson Street, is among the busiest sections of the route. Passyunk Avenue crosses diagonally through the city's grid network, and provides users a more direct link to Philadelphia's Old City district. Located just south of historic Passyunk Square, this two-block corridor experiences typical daily traffic volumes of approximately 5,000 in a very constrained space. Its age reflected in the historic buildings sitting atop the roadway, Passyunk Avenue's typical cross-section is a 10' one-way travel lane, with two 8' lanes for vehicular parking. With several popular eateries and bars in the immediate vicinity, including the famous Geno's Steaks at Passyunk Square at the northern terminus, it's an attractive destination for pedestrians and micromobility users. In such a narrow space, creativity is key if a Complete Street for all is to be achieved.





THE DESIGN | IMPACTS

Our design includes a variety of safety and operational measures to enhance the study corridors for all road users, not solely micromobility users. In this section we discuss some of the elements that we've included in our concept plans that allow our design to be as flexibly and dynamic as the corridors they will be serving.

SAFETY

Safety is our our primary focus, and it's reflected here in our design. Complete Streets elements, such as chicanes, curb extensions, and road diets, are speed and safety countermeasures proven by the FHWA to result in slower traffic speeds and crash reductions:

First, chicanes are located throughout the corridor at strategic midblock locations. Chicanes are proven to reduce speeds between three to nine miles per hour, dependent upon the degree of horizontal deflection and the driver's ability to avoid the deflection. Our design prevents attempts to avoid the deflection by deflecting vehicle traffic towards the street centerline a total of four feet. Drivers have no choice but to reduce speeds and alter their travel path to navigate the street, calming traffic for pedestrians and micromobility users.

"[the design] reduces pedestrian crossing distance by 46.5%, from 56' in the existing conditions to 30'."

Second, the reclamation of space for the micromobility lane and transition zone creates a road diet effect in which travel lanes are reduced. This has two effects:

- first, the travel lane width reduction reduces speeds between one to two miles per hour.
- Second, the narrowed travel lanes reduces the crossing distance for pedestrians. Our design reduces the travel lanes' width by one foot, from 11' to 10', and through curb extensions successfully reduces pedestrian crossing distance by 46.5%, from 56' in the existing conditions to 30' in the redesigned corridor.
- Third, lead pedestrian intervals reduce pedestrian-vehicle conflict, reducing crashes and making all users of the road network feel safer. Studies by the FHWA, with high reliability, have shown lead pedestrian intervals to reduce vehicle-pedestrian crashes by 13 to 14%.

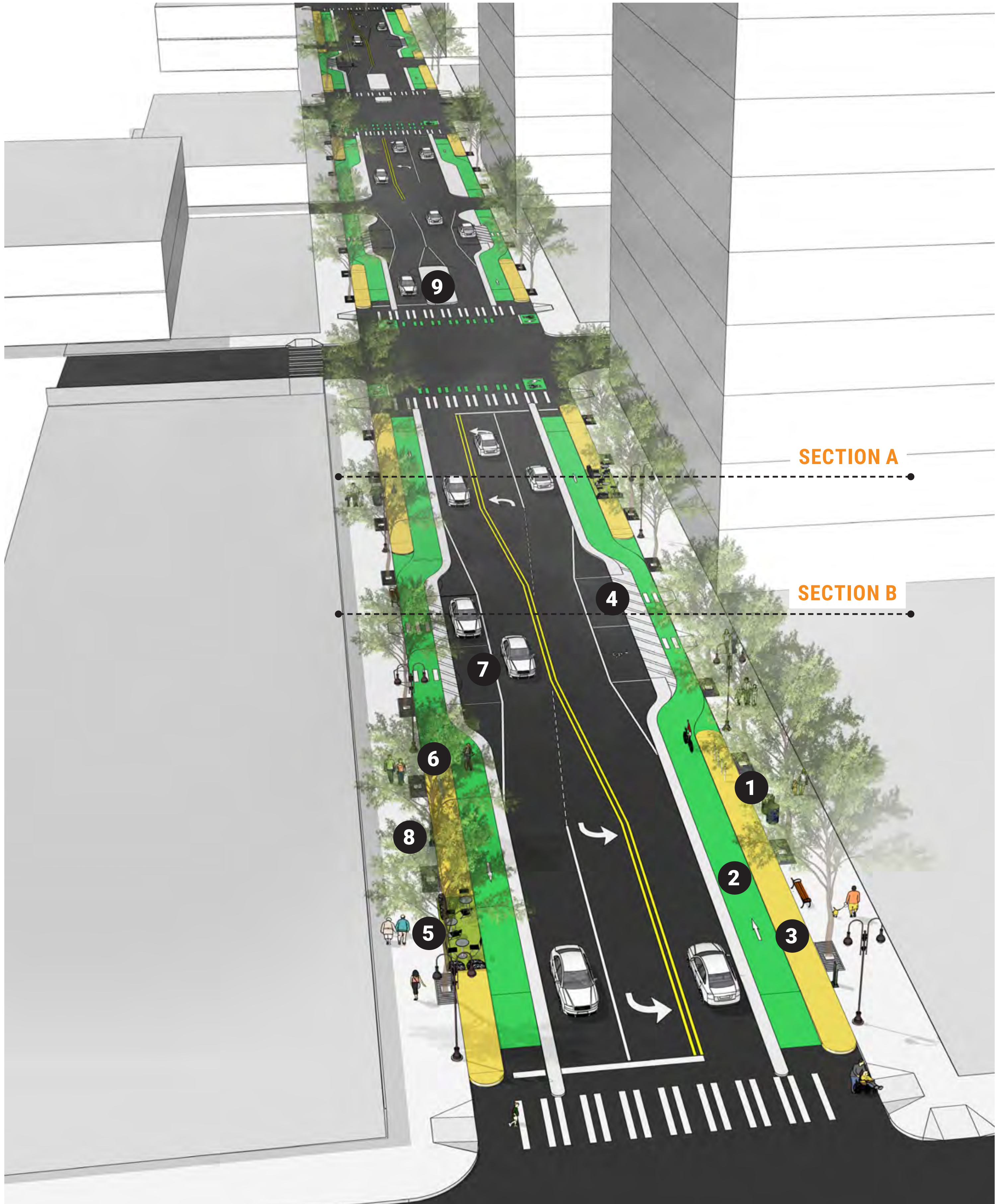
OPERATIONS

Traffic conditions were modelled in both the Bridger Avenue corridor and the Passyunk Avenue corridor utilizing VISSIM 10. Vehicular traffic operations in the Bridger Avenue corridor was observed to flow freely during AM and PM peak period times. The provided capacity along Bridger Avenue was higher than the peak traffic volumes. Therefore, the reprioritization of right-of-way from vehicles to micromobility uses would not significantly affect travel times along the corridor. Along the Bridger Avenue corridor, westbound travel times observed a 5% increase while eastbound travel times observed a 1% increase. These increases are largely due to the removal and shortening of right-turn and left-turn lanes. The prohibition of right-turns on red did not cause any significant adverse change to operations. Vehicular operations were observed to still flow freely despite the reduction in turning lanes.

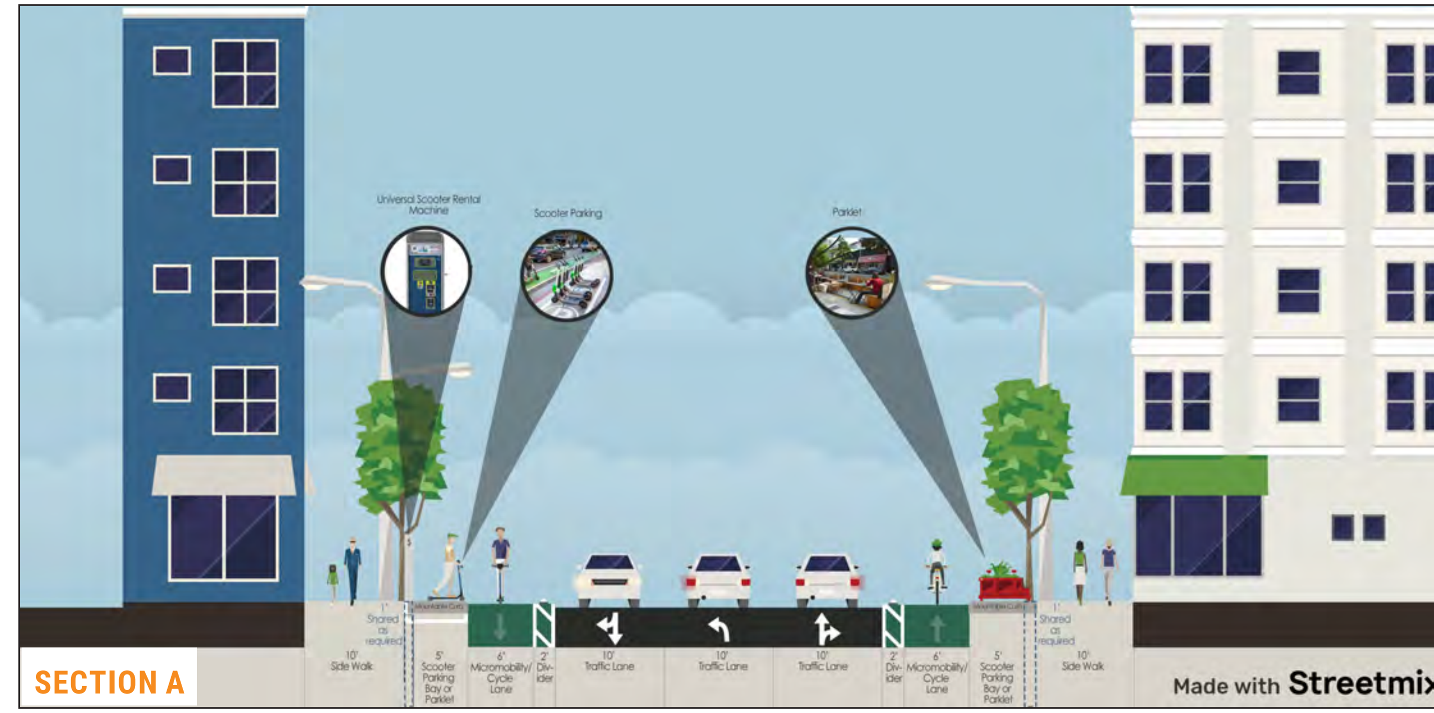
The addition of a greenwave along Bridger Avenue would not negatively affect traffic flow and vehicles are not coordinated along Bridger and instead are coordinated along the side streets that intersect Bridger Avenue.

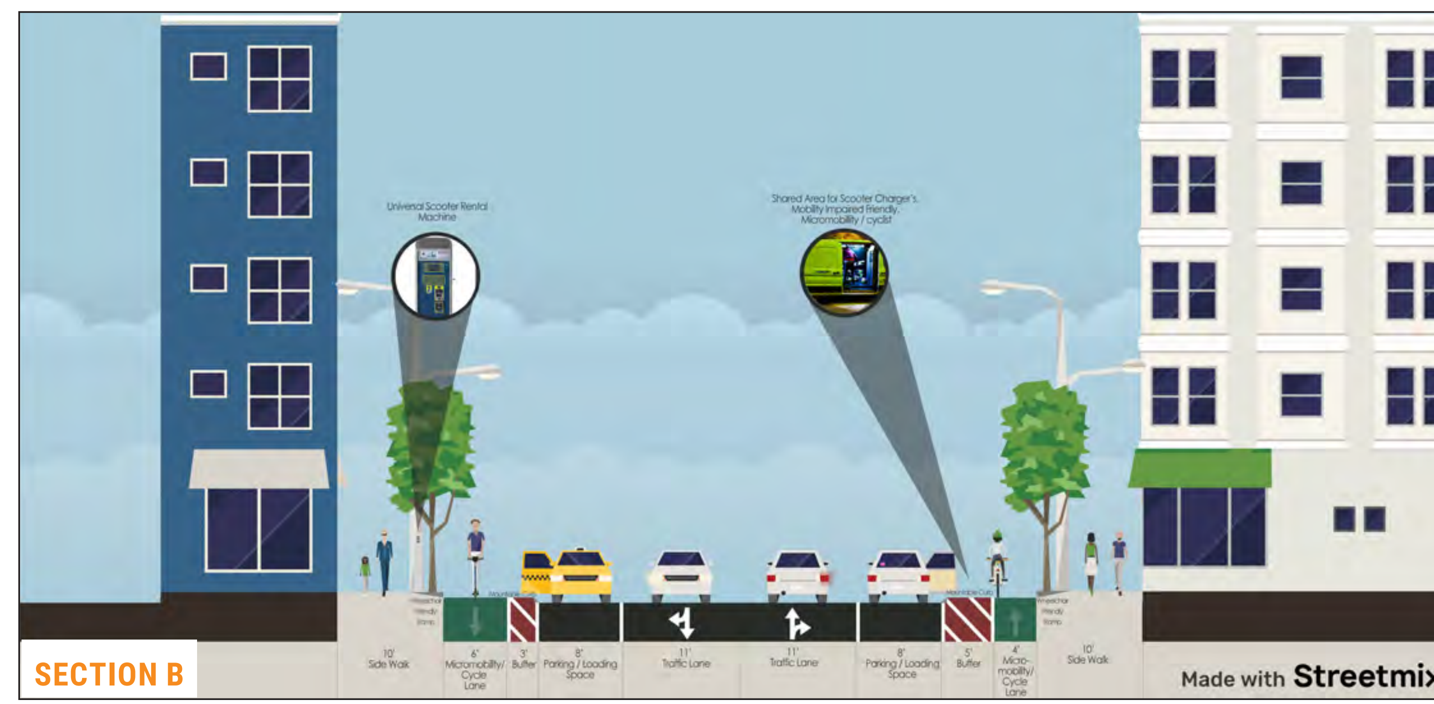
Along the Passyunk Avenue corridor, vehicular travel was also observed to flow freely as well in the VISSIM model. The only adverse delay would be caused by vehicles being held up behind bicyclists, as the current geometry only allows for both users to share a lane. By adding the proposed micromobility lane, vehicle travel times were observed to improve as vehicles would no longer be stuck behind bicyclists. Therefore, the proposed concept would not adversely affect operations of the Passyunk Avenue Corridor.

Additionally, the reduction of parking spaces would improve travel times as vehicles would be less likely to be held up by vehicles attempting to park. The implemented GreenWave would help improve corridor circulation as traffic signals along the route were observed to be pretimed traffic signals with no interaction between the signal controllers.



BRIDGER AVENUE | LAS VEGAS, NV





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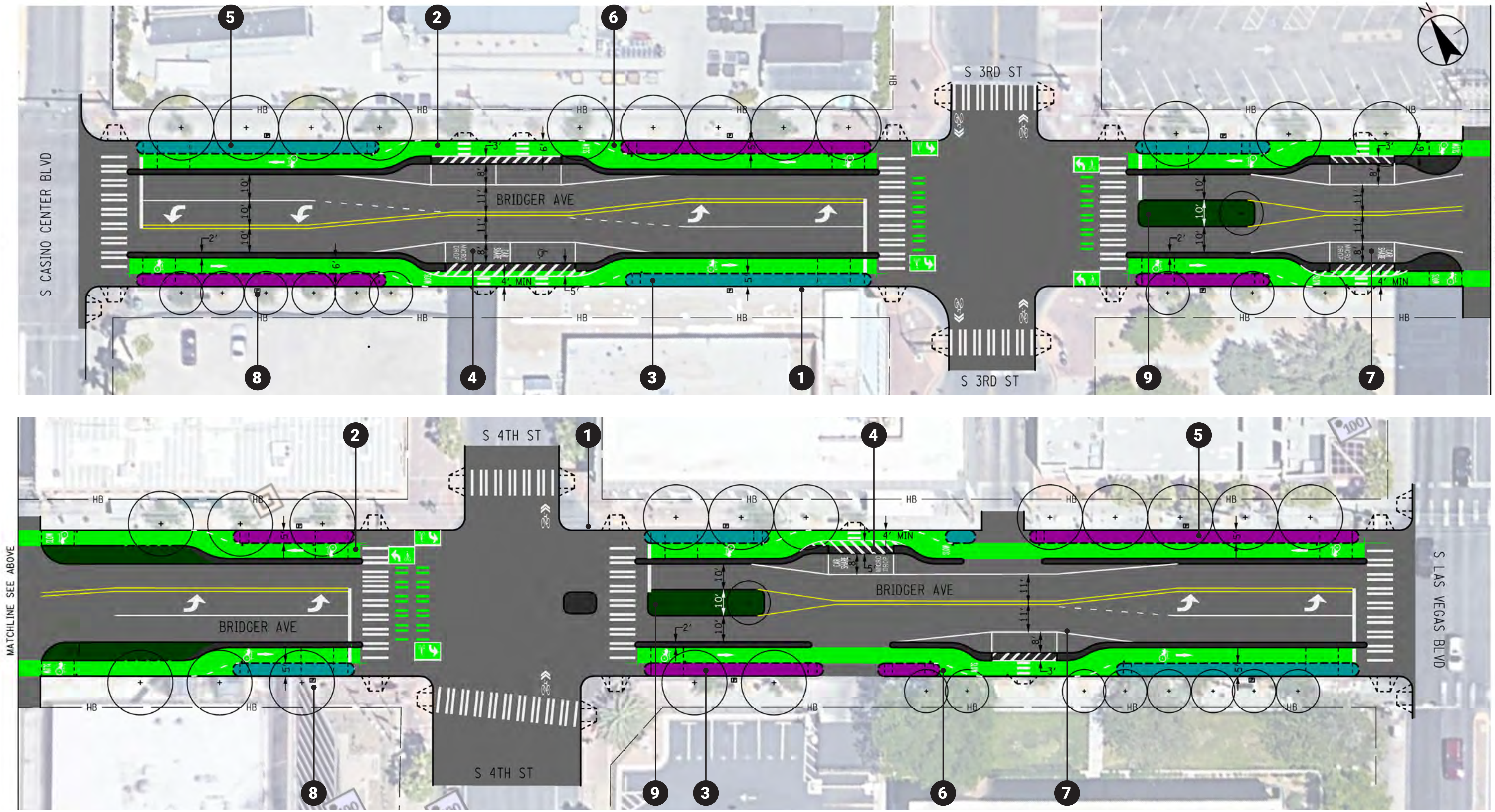
2. Grade Separated Micromobility Lane
3. Designated Micromobility Parking
4. Dynamic Vehicle Parking Zones
5. Potential Parklet Location
6. Embedded GreenWave LED Sensors
7. Traffic calming Chicane
8. Parking Kiosk with Parking collection Technology
9. Potential Landscaping Opportunity

BRIDGER AVENUE | LAS VEGAS, NV



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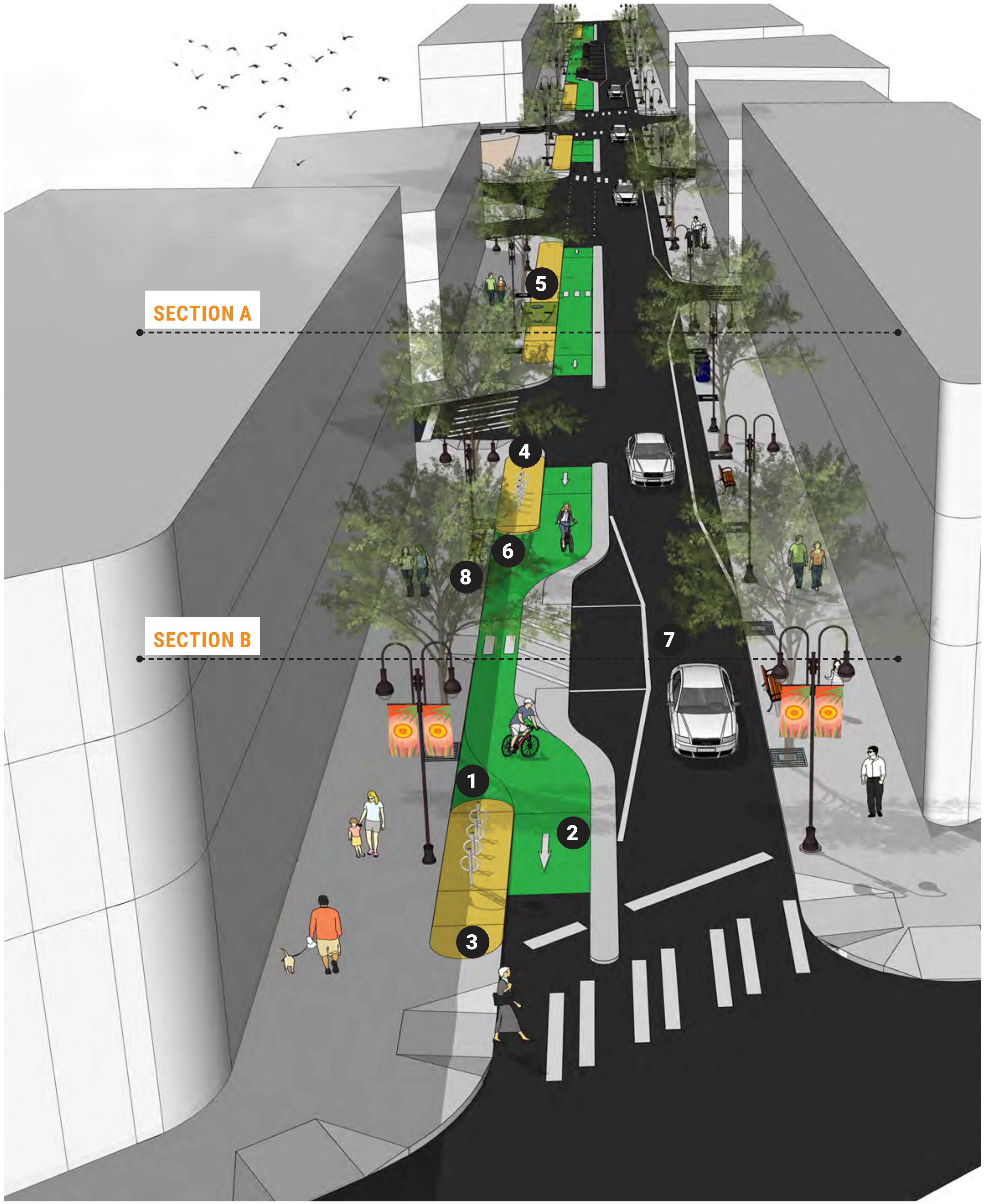

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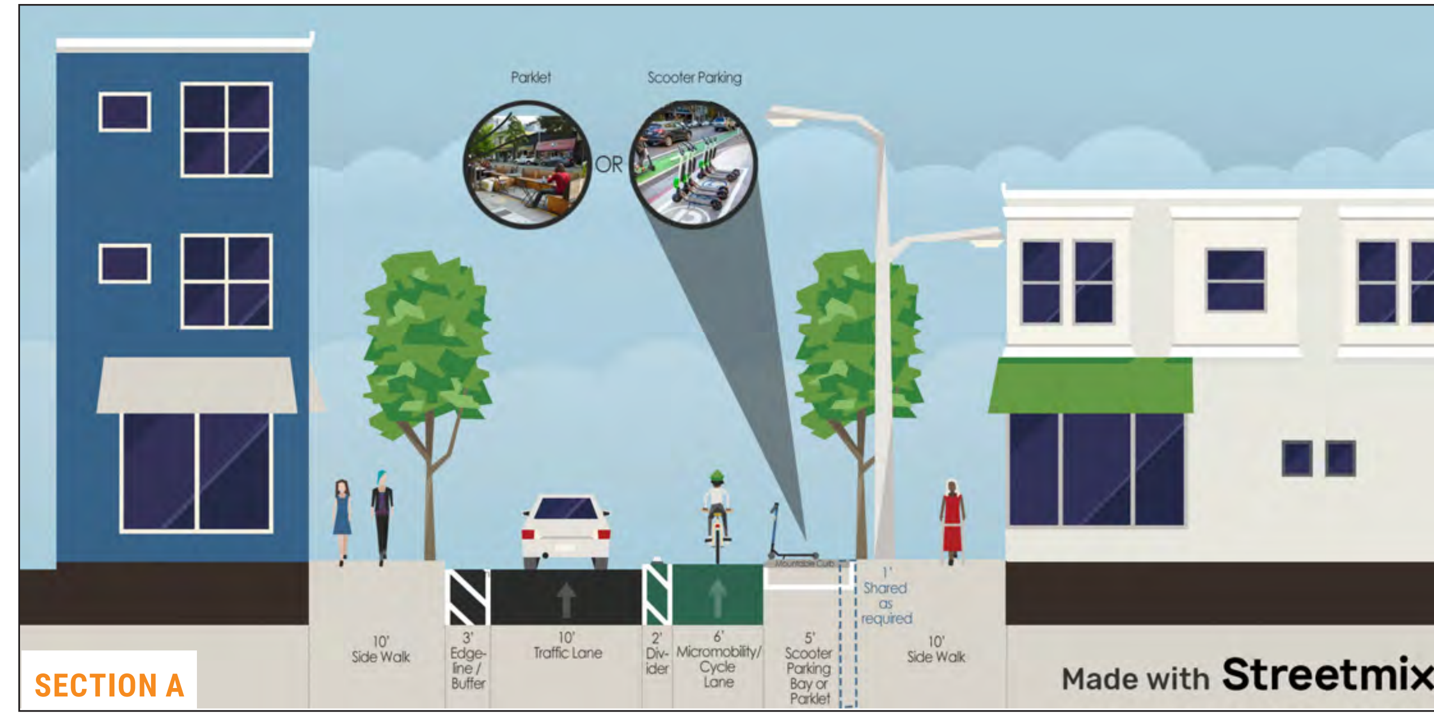

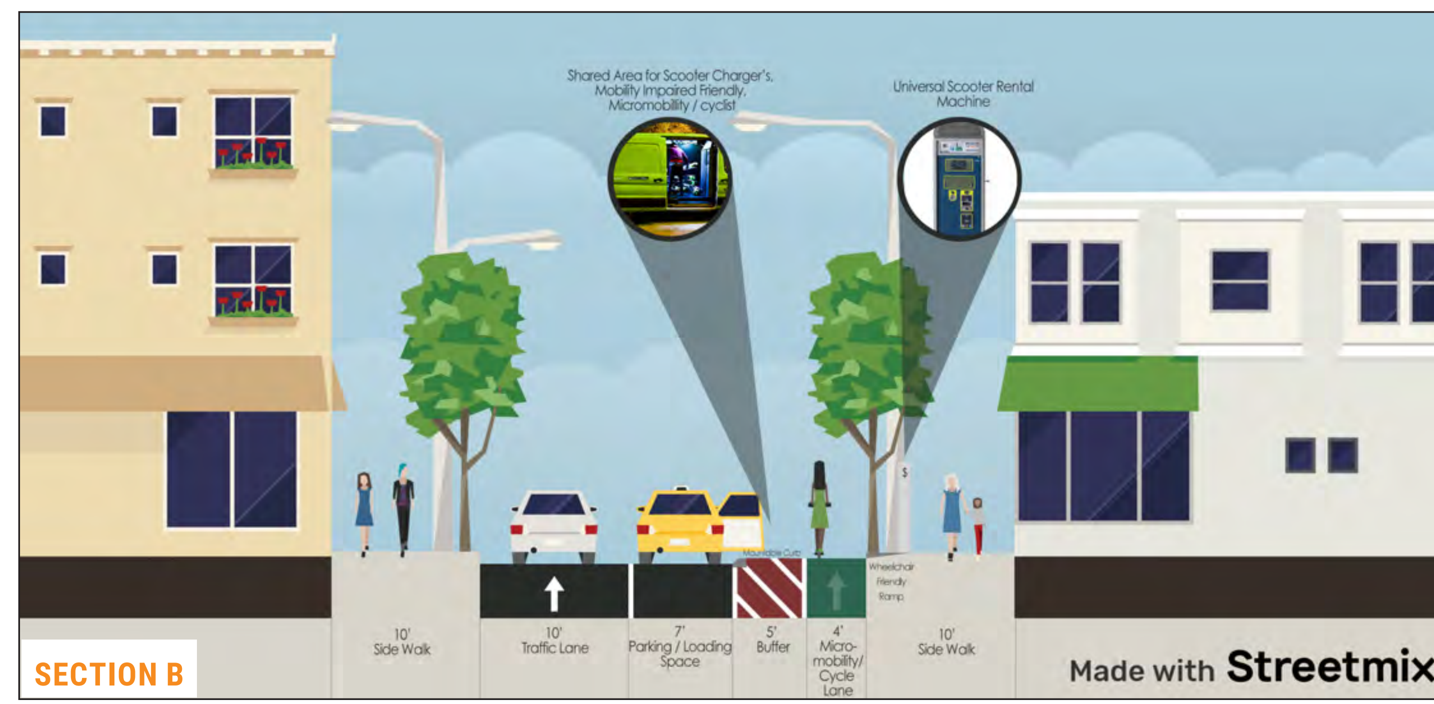

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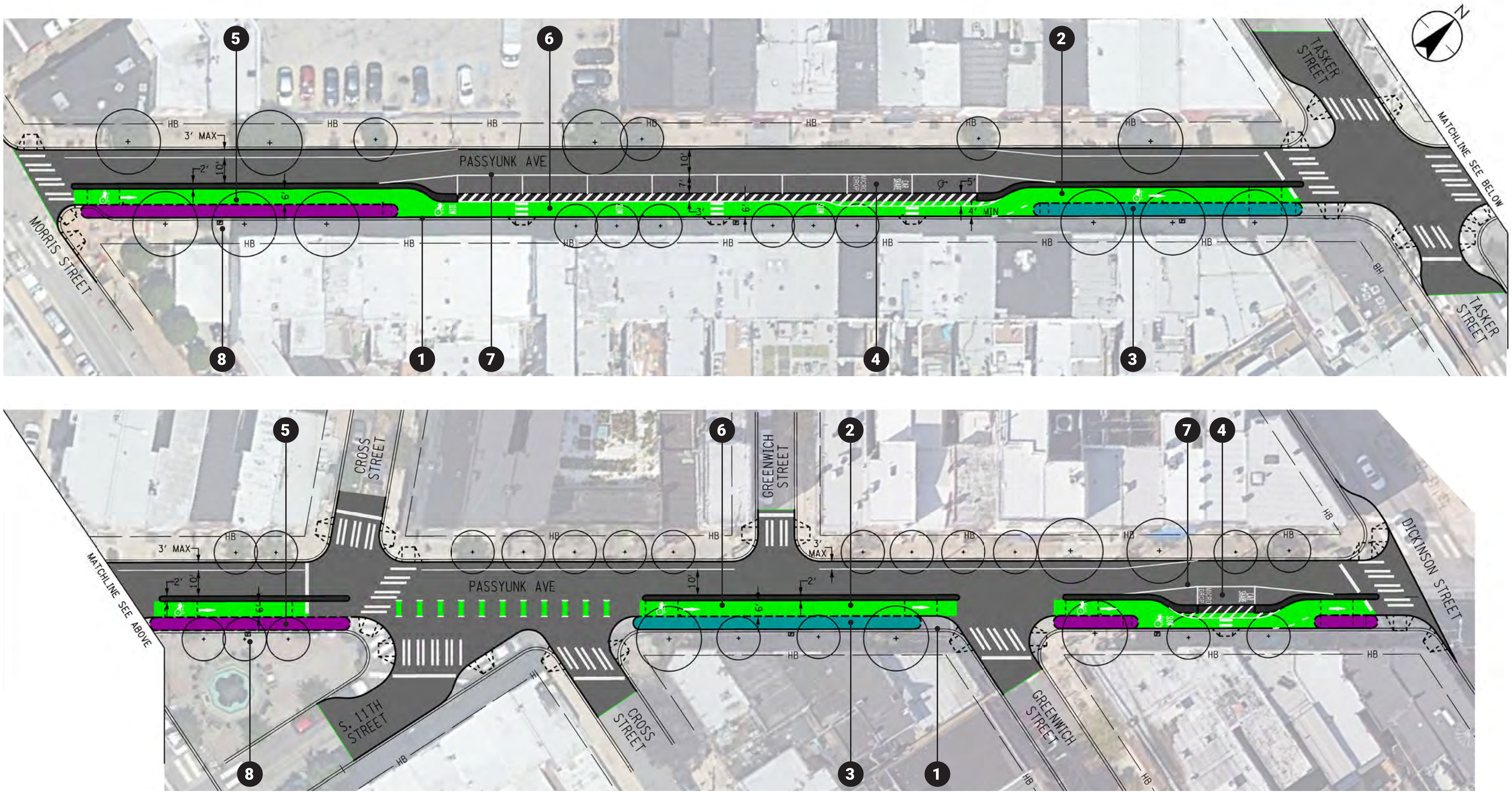

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4 Dynamic Vehicle Parking Zones

5 Potential Parklet Location

6 Embedded GreenWave LED Sensors

7 Traffic calming Chicane

8 Parking Kiosk with Parking collection Technology

APPLICABILITY

TRANSFERABILITY

The stark difference in urban contexts calls out, in high relief, the transferability of our design. From the corridor-level context, to the geographic and climactic context of the metropolitan areas in which the corridors are found, transferability is embedded in the components of the concept.

A transferable design is one that can easily adapt to a number of environments, and our concept is built to withstand harsh climactic conditions at opposite ends of the spectrum. Whether in very hot or cold conditions, materials must either be capable of withstanding the elements or easily replaceable. First, all striping in both corridors is designed to be removable: if it cracks due to erosive water and ice, oppressive heat, or maintenance vehicles, the striping is easily capable of replacement. Our design recommends the use of permeable pavement for Micromobility parking, mitigating drainage considerations and reducing ponding water that can seep in and corrode.

Design elements are likewise included with consideration of the weather conditions of each location. The use of rollable curbs to separate zones, rather than a median barrier, mitigates the potential for damage due to snow plows in cold, wintry conditions; in Las Vegas, the curbs channel runoff into existing stormwater systems in the event of sudden rain events. In environments such as Philadelphia, where snowfall is substantial in winter months, underutilized micromobility parking space may be used as snow storage while the micromobility lane and automobile parking is left available for users.

> "[the design] reallocates space among the existing right-of-way without moving the existing curbline along either corridor."

Transferability is about more than just the weather: it's about the corridor context as well. Our design translates between both open corridors with substantial space for reclamation, such as Bridger Avenue, as well as the narrow, highly-constrained corridors such as Passyunk Avenue. The design utilizes the existing curb-to-curb width, mitigating the need to remove trees, move utilities, or infringe on the existing pedestrian realm. Its Complete Streets approach re-allocates under-utilized space along the corridor to carve out more space for public realm and micromobility, rather than taking additional space outside of the curbline. On the Bridger Avenue corridor, our design eliminates the existing center two-way left-turn lane and instead extends the transition zone into the existing roadway to create narrower lane widths that will calm traffic while also providing space for micromobility storage. On the Passyunk Avenue corridor, these same elements are transferred from Bridger Avenue to the new corridor by reallocating space from existing automobile parking. In both corridors, the same design elements are featured within the existing right-of-way without altering the existing traffic operations or the design of the elements themselves. This is transferability exemplified.

ADAPTABILITY

In addition to being transferable between urban contexts for today's mobility needs, our design is easily adaptable to new forms of micromobility as they appear. Micromobility is an emerging field that encompasses many forms, and as the micromobility industry takes shape—and users articulate their needs and preferences—new forms can and will appear.

First, our micromobility parking zones are form-neutral; that is, by their design they do not provide preferential treatment to any mode of micromobility over another. In doing so, they are easily able to accommodate unknown and future micromobility modes that may arise, as opposed to design concepts which incorporate physical parking structures into the urban context. The root problem of micromobility parking is not the lack of supportive parking structures, but adequately conveying to the user where parking is appropriate. Our painted zones and rollable curbs maintain users within the appropriate zone for usage and then guide users to the appropriate parking location, but do not state a preference for any particular type of micromobility.

Accordingly, our zones are easily adaptable to new forms. Docking station-based bikeshare system operators, such as Las Vegas' RTC or B-Cycle, which operates Philadelphia's Indego, provide their own dock stations for their vehicles. E-Scooters are ill-adapted to using such racks, and future forms of E-Scooters may entail three-wheels (such as those unveiled recently by Segway), obviating the need for racks. As new forms emerge, micromobility operators may design and provide intuitive parking facilities tailored to the particular needs of their vehicles. With zones for their use identified, these facilities are easily installed and the zones adapted to suit their use. Where the size of parking zones is more than sufficient to account for micromobility parking, underutilized portions of the zones may be reclaimed by parklets, creating attractive spaces for pedestrians and obtaining the greatest possible value within the corridor.

Second, the micromobility lane itself is adaptable to its urban context. Our design calls for a 6' micromobility lane grade-separated with rollable curbs, wider than current design standards. While our design does so to provide additional space for future forms that may require more space in the right-of-way than bicycles or E-Scooters, this extra dimension allows for lane width reductions to accommodate more constrained rights of way. Furthermore, for applications in which installation of the rollable curb is infeasible or not cost-effective, a similar separation effect may be achieved with bollards at less cost. The micromobility lane with associated rollable curbs takes approximately 1.5' on either side of the road, which can typically be accommodated by slightly narrowing vehicular or parking lanes.themselves. This is transferability exemplified.

CONSTRUCTABILITY

Perhaps the strength of our design is its constructability. Constructability separates the futuristic designs from the truly innovative; whereas idealistic designs fail to consider the likelihood or feasibility of a design's construction based on current technology, innovate, constructable designs account for the substantive considerations of execution and deliver a project that can be funded and built with minimal delay.

Perhaps most important to our design is that it reallocates space among the existing right-of-way without moving the existing curbline along either corridor. Along both Bridger and Passyunk Avenues, reallocation is achieved through reclaiming space between the curbline; along Bridger, the underutilized two-way left-turn lane and vehicle parking is reclaimed to create space for the micromobility lane and dynamic parking zones. Along Passyunk, existing parking space is first reclaimed to make space for the micromobility lane, and then reallocated along the corridor, without requiring a change in the existing curbline. In a fiscally-constrained environment, our design:

1. Minimizes or eliminates sidewalk utility conflicts, including drainage system relocation;
2. Minimizes or eliminates impacts to existing pedestrian traffic, as no detours are required;
3. Allows for construction through construction projects classified 2R and above under FHWA standards.

Moreover, our design conforms to already-existing industry standards and guidelines for design and makes use of good engineer's judgment to allow for seamless construction. At 10', all travel lanes along both corridors adhere to both AASHTO standards and NACTO guidance for minimum lane width. Chicanes, curb extensions, and separated bicycle lanes are all proven safety and speed countermeasures, extensively studied and documented by the FHWA. And, while the 7' parking lane may be a design exception in some states, it meets established NACTO guidance for parking lane width and, in the context of the narrow Passyunk Avenue corridor, represents good engineers' judgment. This width is widely accepted and recommended by one of the most important organizations in transportation.

ECONOMIC IMPACTS

While reliable data on the economic impacts of micromobility is still emerging, the economics of Complete Streets improvements are well-documented and have good things to say for local businesses.

First, Complete Streets investment spurs private development and, in a rapidly revitalizing downtown, creating a more micromobility and pedestrian-friendly environment along a street corridor will only draw more private dollars to that area. Streetscape improvements along Barracks Row in Washington, D.C. spurred the formation of forty new businesses along the 0.75-mile corridor, creating over 200 jobs in the process. A similar project in Lancaster, CA saw the inclusion of traffic calming measures and wider sidewalks; in the six years following its completion, an estimated $125 million in private investment poured into the downtown along the corridor. Sales tax revenues increased by 26%, over 800 new jobs were created as a direct result of new business formation, and vacancy rates along the corridor are as low as 4%. Another study conducted by the Brookings Institute found that retail revenues increase by as much as 80% in areas with better walkability.

Second, Complete Streets investment raises property values, for residents and businesses alike. Office spaces in walkable urban environments command a 74% premium over similar offices in driveable environments, reflecting pent-up demand for these types of spaces and contexts. A study of retail rent in Washington, D.C. found that a one-point increase in walkability on a five-point scale led to a $9 per square foot increase in rent.

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The best plans are rarely created alone. We would like to thank all the contributors and stakeholders who helped guide our team in developing the conceptual designs presented in this submission.

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