



Potrero Hill Neighborhood Transportation Plan

FINAL REPORT



JUNE, 2015

ACKNOWLEDGEMENTS

This final report and study are the result of the hard work, dedication, and enthusiasm of a number of people and organizations.

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Pedestrian improvements recommended in the plan will build upon the successful community gardening program.

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2014

EXECUTIVE SUMMARY

The Potrero Hill Neighborhood Transportation Plan (NTP) is the result of a community-based planning effort in the southern Potrero Hill neighborhood of San Francisco. The technical team collaborated with community stakeholders to identify multimodal transportation priorities at the neighborhood scale, prioritizing near-term improvements to improve connectivity across the site and to the broader neighborhood, city, and region. The final recommendations focus on low-cost improvements that could be implemented before the site is redeveloped wholesale through the Rebuild Potrero project.

Due to the extensive planning processes preceding the current effort as well as the anticipated redevelopment of the Potrero Terrace and Annex housing sites through the Rebuild Potrero project, this NTP was focused on developing low-infrastructure transportation solutions that could bring benefit to residents in the very near term. Three priority projects emerged:

1. Building on the success of the neighborhood's walking school bus program, the team partnered with residents to design pedestrian safety improvements at five intersections throughout the project site. These improvements call for the use of materials that do not require infrastructure changes. Therefore, they are lower in cost and can be

reused in other parts of the city once development begins for Rebuild Potrero. They also will allow space for transit amenities such as shelters, allowing the city to test the use of non-infrastructure materials (e.g., improvements that don't require regrading streets, moving sewer catch-basins, etc.) for a concept such as a bus bulb.

2. Complementing the intersection design improvements, the team also proposed a lighting project behind the Potrero Hill Recreation Center to improve security for the walking school bus participants as well as other residents using this key link in the dark.

3. Finally, the project team developed a potential shuttle route to enhance access for residents across the site and to other goods and services.

The Potrero Hill NTP includes cost estimates and a funding and implementation strategy for each of the projects described above. The first two pedestrian safety projects anticipate full funding by the time of the study is adopted, and implementation could be as soon as the end of 2015. The shuttle project will require further refinement and identification of funding sources, and implementation is likely at least 1–2 years away.

1. INTRODUCTION

The Potrero Hill Neighborhood Transportation Plan (NTP) is the result of a community-based planning effort in the southern Potrero Hill neighborhood of San Francisco. The technical team collaborated with community stakeholders to identify multimodal transportation priorities at the neighborhood scale, prioritizing near-term improvements to improve connectivity across the site and to the broader neighborhood, city, and region. The final recommendations focus on low-cost improvements that could be implemented before the site is redeveloped wholesale through the Rebuild Potrero project, described below.

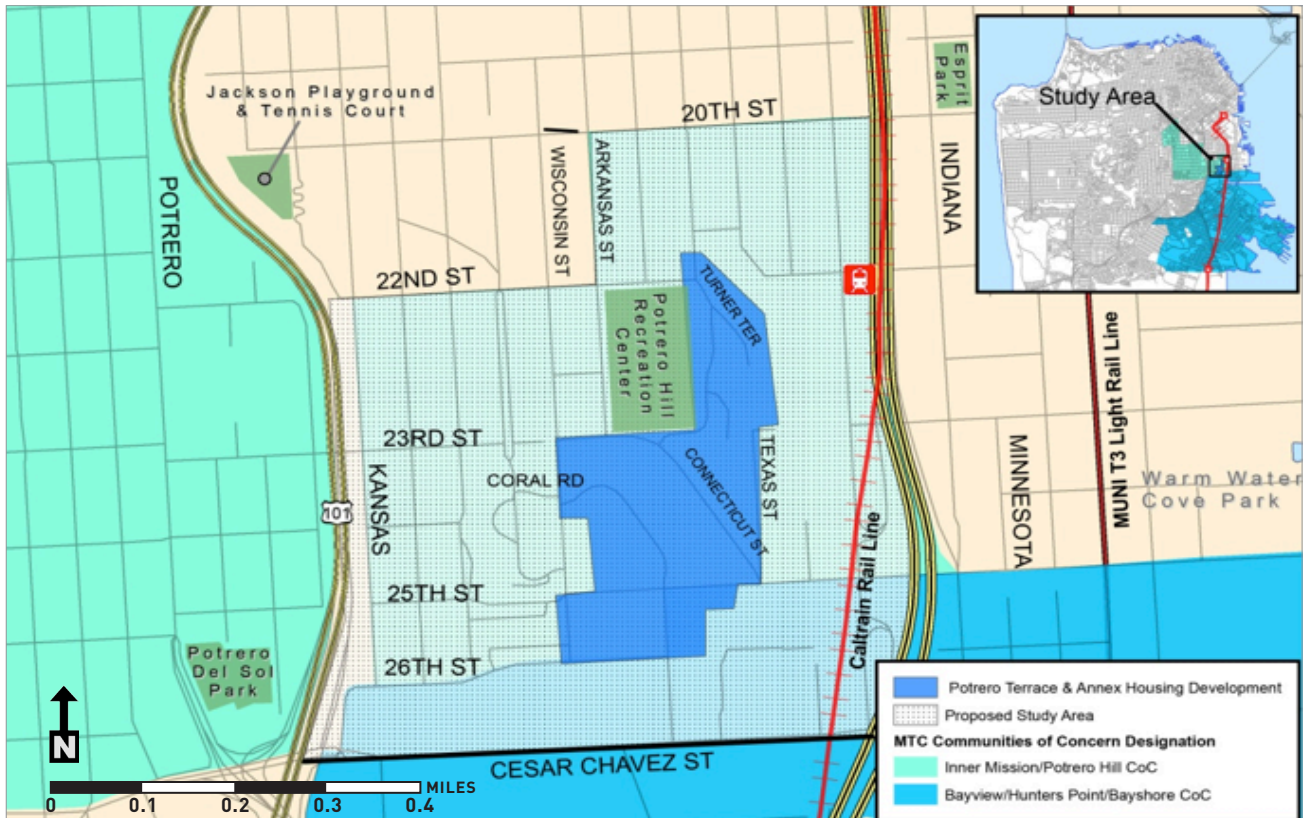
This introduction chapter provides an overview of existing conditions, goals and objectives, outreach, and prioritized transportation improvements. Chapters 2-5 of this final report provide more details on each of the transportation priorities, including the context and conditions that led to their prioritization.

PROJECT SITE AND EXISTING CONDITIONS

The plan study area is bordered by US-101 to the west, I-280 to the east, Cesar Chavez Street to the south, and

22nd Street/20th Street to the north (see Figure 1-1), wholly encompassing the Potrero Annex and Potrero Terrace public housing sites, with approximately 1,200 people living in 606 homes on the steep, south-facing slope of the hill. The sites were developed in the middle of the 20th Century, during a period in which accommodating cars was the highest transportation priority. A product of its time, the Potrero Annex and Terrace are characterized by wide roads and narrow sidewalks interrupted by curb cuts that provide access to ample off-street parking. While traffic volumes through the site are relatively low, street widths encourage cars to travel at high speeds, and intersection design prioritizes efficient vehicle movement rather than safe and comfortable pedestrian crossings. The circuitous internal street grid and the area's steep topography further reduce pedestrian accessibility.

The public housing sites are also isolated from the rest of San Francisco with relatively few and challenging connections to the surrounding neighborhoods. A number of these connections require crossing the I-280 and US 101 freeways, which form major barriers just east and west of the site. While there are multiple transit lines that stop along or within the housing site, the lines do not connect residents from one end of the site to the other, forcing residents to undertake a steep walk or an untimed transfer to access many locations outside of the site.



Finally, there are few transit amenities on the site. Narrow sidewalks do not have the space to allow for Muni shelters. Stops are demarcated by painted lines on either the street or a light pole. This lack of amenities makes using transit a less desirable option.

Chapters 2 through 5 provide further context related to each of the recommended improvements.

Rebuild Potrero Project

The Rebuild Potrero project will demolish and re-build the public housing sites in their entirety as a mixed-use, mixed-income neighborhood, replacing all of the public housing units and adding up to 1,000 moderate-income and market-rate units and building a new gridded street network. The effort is currently undergoing environmental review and seeking funding for implementation. The groundbreaking is expected by 2016, but the project is broken into multiple phases that will not be fully completed for at least 10 to 15 years.

BRIDGE Housing is the lead developer for Rebuild Potrero and also leads community building efforts such as the Healthy Generations Project, the sites' walking club, community gardening program, and the walking school bus. Using their intimate knowledge and relationships with residents, BRIDGE served as the outreach consultant for the project. See outreach summary and Appendix A for more details.

Previous Planning Efforts

Previous planning efforts led by community partners have identified important and urgent transportation needs before Rebuild Potrero can be completed; Potrero Hill NTP aimed to identify and prioritize projects to address those needs while advancing design, cost estimation, and funding and implementation strategies. The NTP built on the following studies: Baseline Conditions Assessment of HOPE SF Redevelopment: Potrero Terrace and Annex (SFDPH), Potrero Hope SF Master Plan EIR, and Potrero Hill Traffic Calming Project (SFMTA). These efforts included a full description of existing conditions, and a summary was documented in the Green Connections Potrero Terrace and Annex Needs Assessment Summary Memo and the Potrero Hill Neighborhood Transportation Plan Existing Conditions, Needs Assessment, and Prioritized Projects Memo (see Appendix B).

GOALS AND OBJECTIVES

The Potrero Hill NTP effort aimed to respond to the needs and priorities of the community and build on past plan-

ning efforts in and around the study area. The team and community partner goals of the study were designed to align with the goals for the Rebuild Potrero and Healthy Generations Projects (see Figure 1-2).

FIGURE 1-2. POTRERO HILL NTP GOALS AND OBJECTIVES

GOALS	OBJECTIVES
1. Enhance connectivity to daily goods and services for Potrero Terrace and Annex residents.	1.1 Create new transportation options within site
	1.2 Improve access to transportation options outside of site
	1.3 Supplement existing transit options to/from site
2. Improve sense of safety and security in Potrero Terrace and Annex.	2.1 Seek solutions that calm traffic within site
	2.2 Make transit waiting areas safer and more comfortable
3. Provide short-term improvements that have independent utility before the implementation of rebuild of the site.	3.1 Develop solutions that have short lead times, low barriers to implementation, and minimal need for demolition/removal during the rebuild effort
4. Strengthen community capacity.	4.1 Complete strong community process
	4.2 Identify solutions that foster community involvement

Source: SFCTA, 2014.

OUTREACH SUMMARY

The Potrero Hill NTP work, along with the prior efforts identified above, included extensive community outreach to identify concerns and priorities among community members. These community outreach efforts included:

- Participation in Unite Potrero: A Community Wide Get Together, at which Potrero residents and stakeholders gathered to identify trends, issues, and priorities and create a cohesive vision for the future, January 2011
- Public outreach by the SFMTA and participation in semi-monthly Community Building Group meeting to gather information that would help identify strategies to improve accessibility and mobility for Potrero residents, Fall and Winter 2011
- Focus group as part of the HOPE SF efforts, August 2013
- Participation in Rebuild Potrero's Walking Club which included one-on-one discussions of community transportation issues, Spring 2013
- Participation in PARADISE Plan Community Needs Assessment, including a presentation to the community and assessment of education, economic sta-

bility, public safety, health and wellness, technology access, and transportation needs, October 2013

- Rebuild Potrero Community Meetings, Potrero Hill Neighborhood House, bi-monthly October 2013 through March 2015 (4 total meetings)
- Participation in Rebuild Potrero’s Walking Club by Potrero Hill NTP project team which included one-on-one discussions of community transportation issues, November 2013
- Participation in Rebuild Potrero’s Walking School Bus by Potrero Hill NTP project team and Fletcher Studio, which included one-on-one discussions of community transportation issues, particularly related to pedestrian safety along the walking school bus routes, March and September 2014
- Site visits to take measurements, verify conditions, and obtain background shots for renderings, September and October 2014
- NTP working group consisting largely of Community Health Leaders provided input on designs through a series of meetings during the fall of 2014; the series included a field trip to Persia Triangle in November 2014

A full summary of the NTP outreach efforts is included in Appendix A.

OVERVIEW OF TRANSPORTATION IMPROVEMENTS AND EVALUATION

The team compiled the full list of all the potential projects and programmatic improvements that have been identified through review of past planning efforts and community outreach. This list is included as Appendix B. The principal themes that surfaced for desired transportation improvements were:

- Improve access to goods and services as well as destinations across the two housing sites, focusing on ways to mitigate the impact of the loss of the 53 Southern Heights Muni bus route—e.g. introduce a shuttle or resident-driver program
- Improve pedestrian amenities and safety especially at hot-spot intersections (based on safety concerns or pedestrian activity); fill missing sidewalks and enhance intersections and roadway crossings
- Improve transit stops and transit amenities

The team conducted an evaluation of the full project list to identify the highest priority improvements to further de-

velop as part of this project. The evaluation criteria used to select the priority projects were developed based on the Potrero Hill NTP goals and objectives and are shown in Figure 1-3. The results of the initial prioritization process are shown in Figure 1-4. Note that Figure 1-4 (next page) is slightly different than that included in Appendix B be-

FIGURE 1-3. EVALUATION CRITERIA

EVALUATION CRITERIA	DESCRIPTION	POTRERO HILL NTP GOAL ADDRESSED
Hot Spot (Safety)	High collision intersection, high pedestrian activity, pedestrian-vehicle conflicts found through field visits by project team	#2
Hot Spot (Transit)	Transit stops with highest boardings by community members	#2
Community Support	Association with school/park/health center-focused areas, identified by community through outreach results in current or previous efforts	#1, #2, #4
Time Frame	Ability to implement in the short or medium term, particularly if within Rebuild Potrero project area.	#3
Collaboration Potential	Higher potential for collaboration with parallel efforts to leverage funding and construction synergies	#3, #4

Source: Existing Conditions, Needs Assessment, and Prioritized Projects Memo, Fehr & Peers, 2014.

cause it reflects further refinement that occurred after the original memo was finalized.

The team then conducted additional feasibility analysis on this draft prioritized project list to determine if any projects or programmatic improvements were infeasible. The following projects were determined to be infeasible, unnecessary given the final NTP recommendations, or outside the scope of this project:

- Fill sidewalk gaps (with prioritization on gaps not inside Rebuild Potrero boundaries): Through collaboration with the SFMTA it was determined that filling sidewalk gaps outside the Potrero Annex and Terrace site was a lower priority than improving the pedestrian network on the site, given that most pedestrian trips are made to services and transit on or directly adjacent to the site.
- Resident driver program with professional development component: The team further investigated the potential for several ridesharing options, including partnership with a local carsharing company, a volunteer driver program, and a paid resident driver program. None of these options are feasible due to issues with safety, liability, and cost.
- Site transportation coordinator: The team de-

terminated that a transportation coordinator was unnecessary given the types of improvements that were being considered for immediate implementation. If a shuttle or resident driver program were to be implemented in the future, a coordinator could be reconsidered.

The final stage of the evaluation process was to group projects for the purposes of implementation. Groupings are shown in Figure 1-5 (next page). Subsequent chapters provide additional detail for each group as well as additional information on project funding and implementation.

OVERVIEW OF FUNDING AND IMPLEMENTATION

Due to the extensive planning work undertaken before the start of the Potrero Hill NTP, the project was able to focus on creating strong funding and implementation plans. The project has been able to complete funding plans for two significant capital projects (see Chapters 2, 3, and 4). Both projects have lead implementing agencies with project managers assigned to them and anticipate completion of implementation by the end of 2015.

FIGURE 1-4. DRAFT PROJECT LIST

PROJECT NUMBER	DESCRIPTION	HOT SPOT (SAFETY)	HOT SPOT (TRANSIT USE)	COMMUNITY SUPPORT	TIME FRAME	COLLABORATION POTENTIAL
CAPITAL IMPROVEMENTS						
1	Transit stop improvements at 25th St./ Connecticut St. (e.g. signage, benches, lighting)		X	X	X	X
2	Transit stop improvements at 25th St./ Texas St./ Dakota St. (e.g. signage, benches, lighting)		X	X	X	X
3	Transit stop improvements at 25th St./ Wisconsin St. (e.g. signage, benches, lighting)		X	X	X	X
4	Intersection safety improvements - 25th St./ Connecticut St.	X	X	X	X	X
5	Intersection safety improvements - 25th St./ Texas St./ Dakota St.	X	X	X	X	X
6	Safe Routes to School (SR2S) project(s) along walking bus routes to schools (e.g. labeling/signing routes, safety improvements, etc.)	X		X	X	X
7	22nd St. stairs between Missouri St. and Texas St. (ensure complete connection)			X	X	X
8	Improvements to the "straight away" and the "cuts" - a pathway that goes around the side of the Rec Center to the Connecticut St. dead end (e.g. pedestrian facilities, add lighting, plantings)			X	X	X
9*	Fill sidewalk gaps (with prioritization on gaps not inside Rebuild Potrero boundaries)			X	X	X
PROGRAMMATIC IMPROVEMENTS						
10	Neighborhood shuttle program		X	X	X	X
11*	Resident driver program with professional development component			X		X
12*	Transportation Coordinator to support the community and transportation programs			X	X	X

Source: Existing Conditions, Needs Assessment, and Prioritized Projects Memo, Fehr & Peers, 2014.

*Project screened and not included in Final Prioritized Project List

FIGURE 1-5. FINAL PRIORITIZED PROJECT LIST

PROJECT GROUPING	PROJECT NUMBER	DESCRIPTION
CAPITAL IMPROVEMENTS		
Traffic Calming and Transit Stop Amenities	1	Transit stop improvements at 25th St./ Connecticut St. (e.g. signage, benches, lighting)
	2	Transit stop improvements at 25th St./ Texas St./ Dakota St. (e.g. signage, benches, lighting)
	3	Transit stop improvements at 25th St./ Wisconsin St. (e.g. signage, benches, lighting)
	4	Intersection safety improvements - 25th St./ Connecticut St.
	5	Intersection safety improvements - 25th St./ Texas St./ Dakota St.
Safe Routes to Schools	6	Safe Routes to School (SR2S) project(s) along walking bus routes to schools (e.g. labeling/signing routes, safety improvements, etc.)
Pathway Improvements and Lighting	7	22nd St. stairs between Missouri St. and Texas St. (ensure complete connection)
	8	Improvements to the "straight away" and the "cuts" - a pathway that goes around the side of the Rec Center to the Connecticut St. dead end (e.g. pedestrian facilities, add lighting, plantings)
PROGRAMMATIC IMPROVEMENTS		
Community Shuttle	10	Neighborhood shuttle program

2. TRAFFIC CALMING

Improving pedestrian safety on the site and improving transit rider comfort were two of the key needs that were prioritized for further development as part of the Potrero Hill NTP. The site is auto-oriented in nature, characterized by wide roads which encourage high traffic speeds, incomplete and narrow sidewalks, and a lack of bus shelters, benches and other transit amenities that make waiting for a bus comfortable. Bus stops are often marked with little more than a worn yellow rectangle in the street or yellow paint on a stop sign or light pole.

The first stage of development was to evaluate a wide range of improvements that could help improve conditions on the site for non-motorized users. These included traffic calming, pedestrian safety interventions, and potential stop improvements to more clearly demarcate stop areas and improve ADA access.

After the initial survey of strategies, specific traffic calming and bus stop improvement concepts were developed for several high priority intersections. The team focused on the two intersections that were identified in the prioritized list of projects at key locations for both transit and safety improvements:

- 25th Street and Connecticut Street
- 25th Street, Texas Street, and Dakota Street

Three additional intersections were selected for improvements that complement the two priority intersections because they slow traffic before reaching those intersections and because these are key crossing points for the walking school bus routes:

- 23rd Street, Dakota Street, and Missouri Street
- 23rd Street and Arkansas Street
- Missouri Street and Watchman Way

POTENTIAL TRAFFIC-CALMING STRATEGIES

The project team identified 14 potential traffic-calming and pedestrian safety strategies. Figure 2-1 (next page) shows nine shorter-term interventions that are characterized by lower costs and shorter installation timelines. All of these interventions are called "non-infrastructure" improvements, given that they do not require constructing permanent features like concrete curbs. Figure 2-2 (next page) shows five strategies requiring a larger commitment of resources to design and construction and longer installation timelines.

FIGURE 2-1. SHORT-TERM TRAFFIC-CALMING AND PEDESTRIAN SAFETY STRATEGIES

INTERVENTION	AVERAGE COST/RANGE (MEDIAN)	POTENTIAL BENEFITS	POTENTIAL DOWNSIDES
SHORTER-TERM			
Crosswalks	\$350-\$1,000 each (avg. \$8.51/linear foot, median \$5.87/linear foot)	Clearly marks common pedestrian crossing paths, increasing visibility for approaching drivers.	Research: No safety benefit to crosswalks without traffic controls.
Street Signage (including stop signs)	Standard Street Signs: avg. \$300 each, median \$220 Other signs: \$23 to \$130 each	Range in benefits; stop signs force drivers to stop, effectiveness of crosswalk alert signs and school signs not documented.	Visual clutter could make drivers less likely to pay attention to most critical signs.
Motion-Activated Beacons	Avg. \$10,010 per intersection, median \$5,170	Provide a special attention-grabbing flashing light that alerts drivers when pedestrians are crossing.	Less effective where pedestrian traffic is consistent throughout the day as beacon flashes almost continuously, reducing driver response.
Speed Bumps/Humps (plastic)	Bumps: \$1,550 each Humps: \$1,000 each	Lower-cost approach to speed bump/hump intervention that instinctively causes most drivers to slow down.	Potential concerns from Muni where applied on bus routes, and potentially less durable on streets with significant traffic from trucks and buses.
Rumble Strips	\$450-550 per set	Provide visual warning and audible feedback to drivers that gets louder when they drive faster; generally applied on freeway shoulders to keep drivers awake.	Emit significant noise in the surrounding area and may not slow drivers much, given low vertical profile.
Transverse Markings	Average \$10 per line, median \$10	Provide a novel visual signal on an approach to a sensitive roadway feature.	Easily ignored.
Safe-Hit Posts	\$50 each	Provide a physical barrier between the street and pedestrian/bike rights of way.	May require more frequent replacement.
Solid Pavement Paint	Average \$3.40/square foot, median \$1.21 median	Provide a visual cue to drivers that a portion of a roadway is to be used differently from the rest of it.	Without other strategies, may not provide enough of a visual cue to prevent drivers from using the space.
Advertising/Awareness	Free—cost of advertising	Provide general awareness.	Documentation of effectiveness limited for smaller application.

Source: ???

FIGURE 2-2. LONG-TERM TRAFFIC-CALMING AND PEDESTRIAN SAFETY STRATEGIES

INTERVENTION	AVERAGE COST/RANGE (MEDIAN)	POTENTIAL BENEFITS	POTENTIAL DOWNSIDES
LONGER-TERM			
Speed Humps (concrete)	Average \$2,640 each, median \$2,130	Intervention that instinctively causes most drivers to slow down.	Potential concerns from Muni where applied on bus routes.
Bollards	\$150-\$350 each	Provide a more permanent physical barrier between the street and pedestrian rights of way	Can create visual clutter
Raised Crosswalks	Average \$8,170 each, median \$7,110	Causes drivers to instinctively slow down at the point at which pedestrians will be crossing.	Can slow transit speeds, increase wear and tear on transit vehicles.
Roundabout/Traffic Circle	Average \$85,370 each, median \$27,190	Causes drivers to physically change course, for which most drivers instinctively slow down.	Potential concerns from Muni where applied on bus routes and SF Fire Department where roundabout narrows travel lanes significantly.
Curb Extensions	Average \$13,000 each, median \$10,150	Reduce crossing distances and, at corners, create tighter turning radii for drivers, slowing travel speeds.	Can create more difficult turns for transit vehicles and trucks.

Source: Appendix C, Traffic Calming Strategies

TRAFFIC CALMING CONCEPTS

Overview

The Rebuild Potrero project will completely reconstruct the Potrero Annex and Terrace in the next 10 to 15 years, including re-grading the site and reconstructing the street network. As such, the project team determined that lower-cost, non-permanent infrastructure interventions, which carry a shorter implementation timeline, would be most effective for quickly improving pedestrian safety and bus rider comfort in the Study Area.

Based on evaluation of the above strategies and community input on the places where traffic calming is most needed, the team created concepts to improve pedestrian safety at the five key intersections identified above in the near term. The concepts focused on narrowing the travelway and using the re-claimed portions of roadway to create inviting spaces that reflect the interests and culture of the community. They also incorporated efforts to improve transit waiting areas.

This chapter includes precedents for the concepts and an overview of the design team's approach. It then details existing conditions at each Study Area intersection identified for improvements and describes the conceptual designs developed for them. The intersection interventions have been funded and are scheduled to be implemented in 2015, more detail on the funding and future implementation steps are described at the end of the chapter.

Precedents

Elements of each of the Potrero Hill traffic calming concepts have been implemented in cities across North America. The concepts create bulb outs, pedestrian passageways, and small plazas, and this section shares examples of similar projects in San Francisco and other cities.

The five intersections included in this project are a set of nodes along typical journeys from the Annex and Terrace to the two main schools in the area.

NON-INFRASTRUCTURE BULB OUTS

Non-infrastructure bulb outs have typically been implemented to pilot longer-term infrastructure changes. Figure 2-3 shows small non-infrastructure bulb outs installed in SoMa, at 6th and Mission streets. The implementation included red paint reinforced by safe-hit posts and boulders, though the physical barriers did not extend past the stop lines to the actual corner. The lack of reinforcement of new corner radii allowed some cars to violate the marked pedestrian space. These painted bulb outs have been in place since November 2013.

Figures 2-4 (next page) and 2-5 (next page) show other similar implementations. Figure 2-5 shows temporary bulb-outs on a set of streets in downtown Phoenix with wide rights of way but relatively low traffic volumes. Painted areas were much larger than those seen in San Francisco and were reinforced by planters of different sizes. Phoenix also chose to use a more decorative color scheme. These temporary bulb outs were replaced by physical curb extensions shortly after this implementation. Figure 2-5 shows an implementation in another part of Phoenix and a simpler implementation in downtown Los Angeles.

NON-INFRASTRUCTURE WALKWAYS/SIDEWALKS

Several cities have used non-infrastructure approaches to create longer sidewalk extensions or walkways. Figure 2-6 (next page) shows how Los Angeles (left) extended a sidewalk in its downtown using an attached gravel-like surface and safe-hit posts. New York City (right) created a whole new pedestrian passageway using a similar surface, safe-hit posts, and large planters.

FIGURE 2-3. NON-INFRASTRUCTURE BULB OUT AT 6TH AND MISSION STREETS IN SAN FRANCISCO.



FIGURE 2-4. NON-INFRASTRUCTURE BULB OUTS IN DOWNTOWN PHOENIX



FIGURE 2-5. NON-INFRASTRUCTURE BULB OUTS IN PHOENIX AND DOWNTOWN LOS ANGELES



FIGURE 2-6. NON-INFRASTRUCTURE PEDESTRIAN PASSAGEWAYS IN LOS ANGELES AND NEW YORK CITY



PLAZAS

San Francisco, Los Angeles, and New York City have all used non-infrastructure interventions to create pedestrian plazas on what were formerly low-volume or low-utility portions of roadway space.

Figure 2-7 shows the most recent implementation of this type of approach in San Francisco. The Persia Triangle Pavement to Parks project used a variety of materials to extend sidewalks and create a gathering space at an Ocean Avenue intersection with particularly challenging geometry in the Excelsior district.

Figure 2-8 shows an implementation in Los Angeles' Silver Lake neighborhood that repurposed a portion of a wide but lightly used roadway that intersected Sunset Boulevard at an angle. The geometry of the intersection previously encouraged cars to turn onto the street at high speeds. Using green paint and planters, the city blocked off the area, which is now used in part for café seating.

The implementation effectively extended a small adjacent triangular park that had functioned as little more than a traffic island previously.

Finally, New York City has used a similar approach to create pedestrian plazas in a number of places where lower Manhattan's irregular street network created large, underused roadway areas with geometries that previously encouraged high travel speeds. Figure 2-9 shows two of these implementations.

Elements

The intersection treatments all draw from a similar palette of materials, which are used to make the spaces pleasant and exciting, give them a cohesive identity, and make them safe and comfortable. This section gives an overview of a few of the main elements present in plans for most of the intersections and the element that could tie them all together.

FIGURE 2-7. PERSIA TRIANGLE PAVEMENT TO PARKS IMPLEMENTATION



FIGURE 2-8. NON-INFRASTRUCTURE PLAZA EXTENSION IN LOS ANGELES



FIGURE 2-9. NON-INFRASTRUCTURE PEDESTRIAN PLAZAS IN NEW YORK CITY



PLANTERS

Concrete manhole reinforcement cylinders are envisioned as a customizable vehicle for plantings and informal seating. The cylinders come in different sizes, cost relatively little, and can be easily stacked and shaped to create compelling designs at each intersection. Figure 2-10 shows the assortment of shapes and sizes in which these cylinders are made, their scale, the ways in which they might be arranged to create an interesting planted area, and how they might be customized to reflect the look and feel of a given site.

PAVEMENT PAINT TREATMENTS

Each bulbout would be demarcated with pavement paint to help create boundaries between safe pedestrian space and the street right of way. As Figure 2-11 shows, such

treatments can be used in a variety of ways to clearly mark pedestrian zones in areas that are otherwise used by automobiles, to give pedestrian areas distinct identities, and, in some cases, to make such areas playful and engaging.

CONNECTIONS

Paint can also be used to make connections between the intersections. Figure 2-12 (next page) shows how lines can be used to engage passersby and cue pedestrians to use space in particular ways.

Figure 2-13 (next page) shows how this is done on the Freedom Trail in Boston. The pathway between the intersections would also act as a playful wayfinding device for children on the way to the two schools.

FIGURE 2-10. PLANTINGS IN MANHOLE REINFORCEMENT CYLINDERS

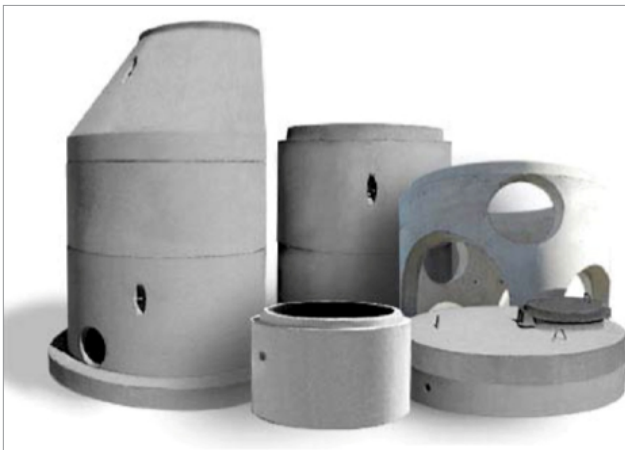


FIGURE 2-11. PAVEMENT PAINT TREATMENTS

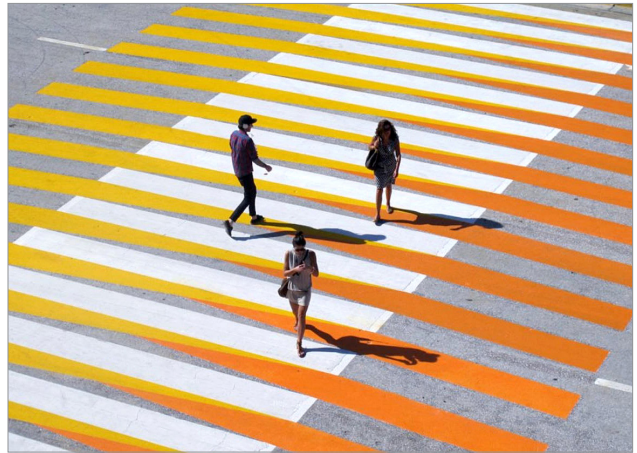
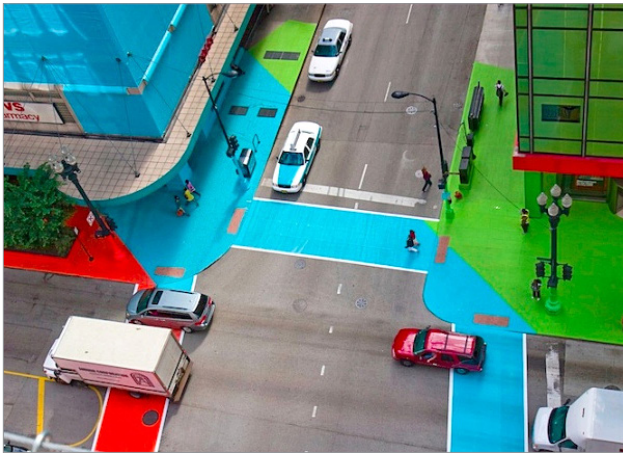


FIGURE 2-12. LINE TYPES

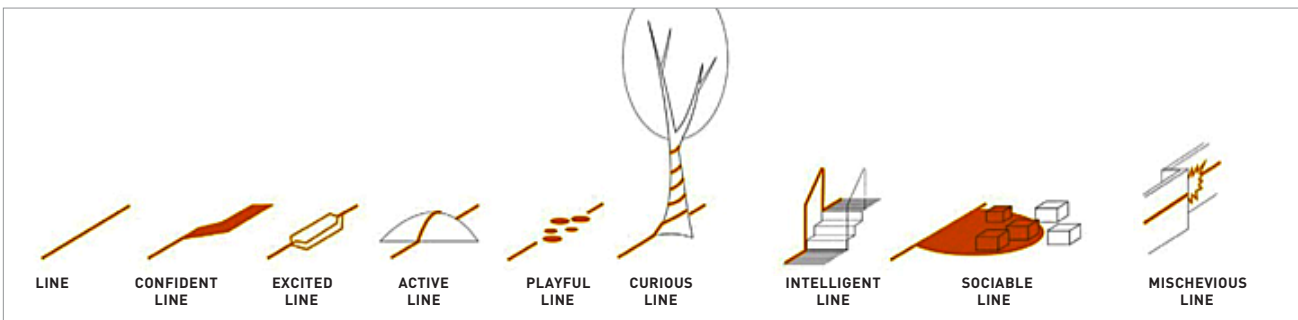


FIGURE 2-13. CONNECTING LINES CASE STUDY IN BOSTON



Design Approach

The approach employed at all five intersections is consistent with guidance in the *NACTO Urban Street Design Guide* and the San Francisco *Better Streets Plan*.

With regard to intersection geometry, the NACTO guide recommends that complex intersections, like the one at 25th, Dakota, and Texas streets, be broken into “multiple compact ones,” with streets bent to meet “at as close to a right angle as possible.” The *Better Streets Plan* does not address intersection geometry in quite the same way, but like the NACTO guide, it recommends minimizing vehicle speeds using, among other strategies, tight curb radii. The *Better Streets Plan* notes that curb radii on streets serving transit should generally be designed to enable the turns of buses using the route.

Both guides endorse temporary designs as a way to improve pedestrian safety until costly changes to curbs and sidewalks are possible. The NACTO guide points to examples of this approach from New York City, Phoenix, and Los Angeles and says temporary designs should include “a strong edge... defined using a combination of striping, bollards, and larger fixed objects such as granite rocks or planters.” These designs can lower traffic speeds, activate public spaces, and energize surrounding streets. The NACTO guide notes that maintaining temporary plazas often requires a dedicated partner who wants to “take ownership of an underutilized road space and can maintain it throughout the year.”

The *Better Streets Plan* also includes guidelines for transit-

route lane widths, bulb-out lengths, transit-stop design, and other streetscape elements. The concepts are consistent with this guidance.

The interventions were designed with the Potrero Annex and Terrace’s distinctive culture in mind. The heavy reliance on plantings reflects the strength of the existing community gardening program, and each intersection will be given distinctive colors and elements based on themes identified by the community.

Intersections: Existing Conditions and Concepts

25TH STREET, DAKOTA STREET, AND TEXAS STREET

Today, the confluence of 25th, Dakota, and Texas streets creates a wide expanse of roadway space on the northern side of the intersection. Much of this space is unused. Though southbound traffic is controlled by a stop sign, the combination of a downhill grade and wide turn angle from Dakota to 25th Street encourages high vehicle speeds approaching the intersection and may encourage vehicles to ignore the stop sign when cross-traffic does not appear to be present. East-west traffic is uncontrolled. Figure 2-14 (next page) shows this existing condition.

The large amount of roadway space creates the potential for a pedestrian plaza and more substantial bus stop at the intersection. Community members expressed interest in beautifying the space, significantly reducing crossing distances, and creating a more comfortable waiting area for bus passengers.



Figure 2-15 shows the improvement concept. It creates pedestrian areas with greenery and seating on both of the northern corners, with a painted and planter-reinforced walkway continuing on Dakota north of Texas Street to the point at which the sidewalk begins. The bus waiting area on the northeastern corner would be raised. Planters of different widths and heights would be placed strategically at the most sensitive edges of the pedestrian spaces, to discourage vehicle intrusion. A narrow pedestrian space would also be painted on the southern side of the intersection, to narrow 25th Street's travel lanes to 12 feet each, per Muni guidelines,¹ and to create room for an eastbound bus shelter.

The concept clarifies the interaction between the three streets by creating two separate intersections at angles close to 90 degrees, per guidance in the *NACTO Urban Street Design Guide*.² The perpendicular orientation of intersections is more legible to pedestrians and drivers alike, and forces drivers to slightly alter their paths of travel and, by instinct, slow down when nearing the intersection. Curb radii are drawn at 20 feet, and the designs allow for the turning sweep of a 40-foot bus, the Muni-route design vehicle called for in the *Better Streets Plan Plan* (see AutoTurn simulations for key intersections in Appendix D). The entryway to Texas Street is designed to be 10 feet wide because there are very low traffic volumes that would utilize this access to what is effectively a parking lot for just a few houses. The narrow "drive-way" makes the pedestrian crossing to the transit stop just to the north as short as possible.

The concept proposes that stop signs be installed on 25th

FIGURE 2-14. EXISTING CONDITION AT INTERSECTION OF 25TH, DAKOTA, AND TEXAS STREETS

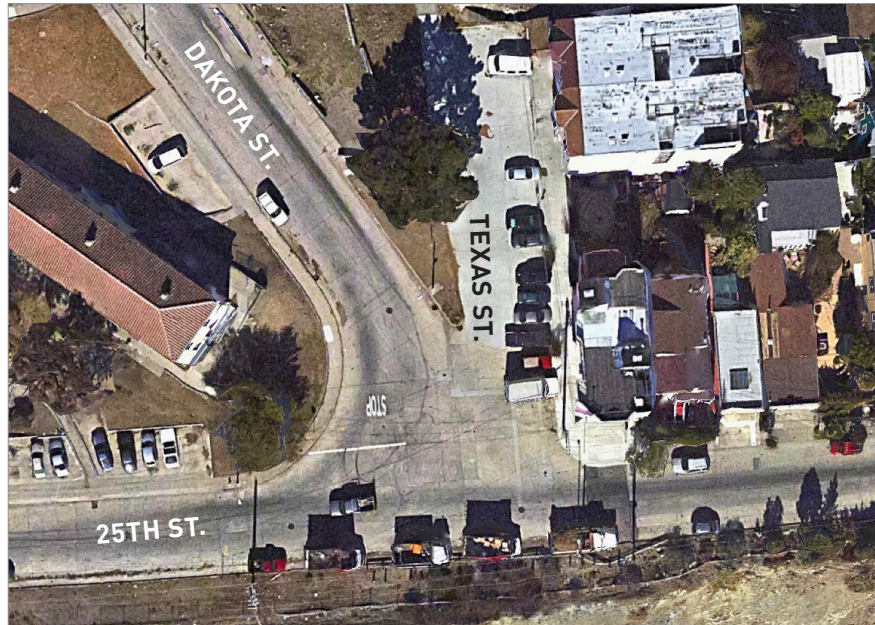


FIGURE 2-15. CONCEPT FOR 25TH, DAKOTA, AND TEXAS STREETS



Street, which would require additional study, per city regulations. Stop bars should be set 8 feet behind crosswalks to allow for turns by vehicles with large turning radii, a strategy recommended in the *Urban Street Design Guide*.³

¹ SFMTA. Regulations for Working in San Francisco Streets. 8th Edition, January 2012. Page 10.

² National Association of City Transportation Officials. Urban Street Design Guide. 2013. Page 104.

³ NACTO (2013), page 119.

25TH STREET AND CONNECTICUT STREET

The intersection of 25th and Connecticut streets is a transfer point between north-south and east-west transit lines and is the southern center of the Potrero Annex portion of the Study Area, with the property management office on the northwest corner of the intersection.

Figure 2-16 shows existing conditions at the intersection. Connecticut Street allows for one-way northbound traffic north of 25th Street, with parking and bus-stop areas marked by white lines. Two-way travel is allowed on Connecticut Street south of the intersection and in both directions on 25th Street. Crosswalks are currently marked by yellow Continental crosswalks, and the intersection is controlled by stop signs. There are no curb ramps at the intersection, and corners feature wide turning radii.

Community members envisioned an enhanced bus waiting area and gathering space around the northeast corner of the intersection. Figure 2-17 shows the improvement concept. Pedestrian spaces on the northern corners of the intersection would be widened using paint, enhanced by planters as a hard barrier. Travel-way widths would be narrowed to 12 feet per lane. The bus stop on the eastern side of Connecticut Street would be enhanced with a raised platform using non-infrastructure materials like those shown in Appendix C.

FIGURE 2-16. EXISTING CONDITION AT 25TH AND CONNECTICUT STREETS

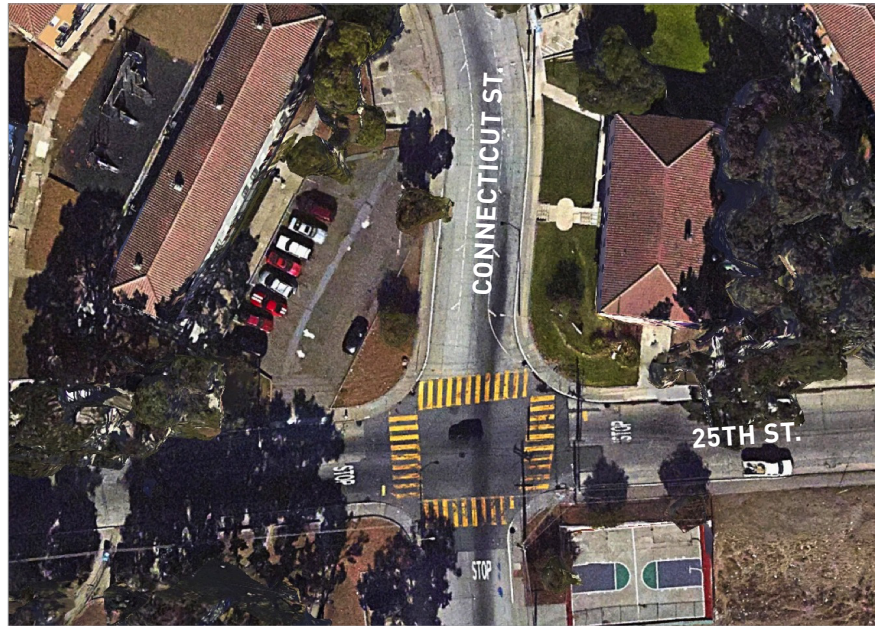


FIGURE 2-17. CONCEPT FOR 25TH AND CONNECTICUT STREETS



23RD STREET, DAKOTA STREET, AND MISSOURI STREET

The confluence of 23rd, Dakota, and Missouri streets creates a sweeping downhill curve between 23rd and Dakota Streets. Missouri meets the intersection at what is roughly a right angle after curving up a hill from the Terrace side of the development. Northbound traffic is controlled by a stop sign in the uphill direction, and there is a bus stop on the northeast corner. Figure 2-18 shows existing conditions at the intersection.

Community members suggested that this intersection have a design treatment connecting it with the surrounding intersections. It could have space to allow for kids' play and, given that there is a bus stop on one corner, could have seating.

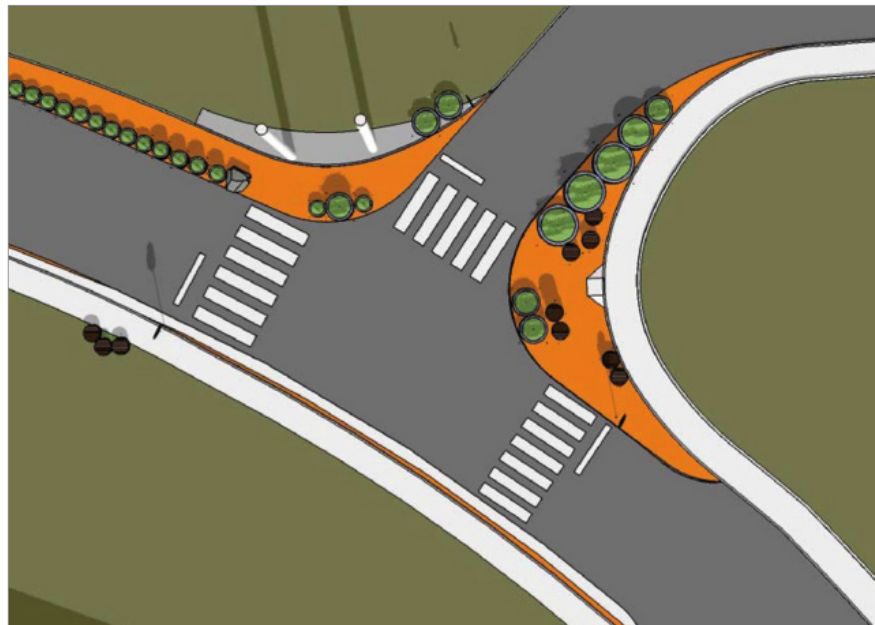
Figure 2-19 shows the proposed concept. Given that Missouri Street does not carry any transit lines, it would narrow the street's travel lanes at the intersections to 10 feet each, per Better Streets Plan guidance, through bulb outs. The curb extension on the northern corner would continue east to the beginning of a sidewalk on the north side of Missouri Street. Given the lack of sidewalk on the northern side of 23rd Street, the extension would continue west as a walkway all the way to another set of intersection improvements at Arkansas Street. Speed cushions would be added on 23rd Street, at the point at which the street reaches its apex before steadily descending into and past the intersection.

The concept repurposes approximately 390 linear feet of curb space, reducing theoretical parking supplies by 19 spaces. However, though parking is currently legal along these curbs, cars are rarely parked on them. The concept proposes stop signs on the northern and western legs of the intersection that would require additional study, per city regulations.

FIGURE 2-18. EXISTING CONDITION AT 23RD, DAKOTA, AND MISSOURI STREETS



FIGURE 2-19. CONCEPT FOR 23RD, DAKOTA, AND MISSOURI STREETS



23RD STREET AND ARKANSAS STREET

The intersection of 23rd and Arkansas streets creates an important connection between the Potrero Annex and Terrace and the entrance to the Potrero Hill Recreation Center, which is located just north of the intersection on Arkansas Street. Southbound traffic is currently controlled by a stop sign, but east-west traffic has no controls. The roadway is basically flat, though 23rd Street rises slightly to the east of the intersection before descending as Dakota Street to 25th Street. Figure 2-20 shows existing conditions.

Community members noted that the intersection is an important connection point, rather than a gathering place. As such, the improvement concept, shown in Figure 2-21, focuses on using painted bulbouts to create more comfortable pedestrian passageways and improve pedestrian connections where sidewalks are inadequate. The figure shows the continuation of the pedestrian passageway on the north side of 23rd Street from the intersection of 23rd, Missouri, and Dakota. The passageway is shown protected by a series of small planters. At the corner, bulbouts narrow the vehicle travelway to 12 feet per lane, creating enough room for transit vehicles.

FIGURE 2-20. EXISTING CONDITION AT 23RD AND ARKANSAS STREETS

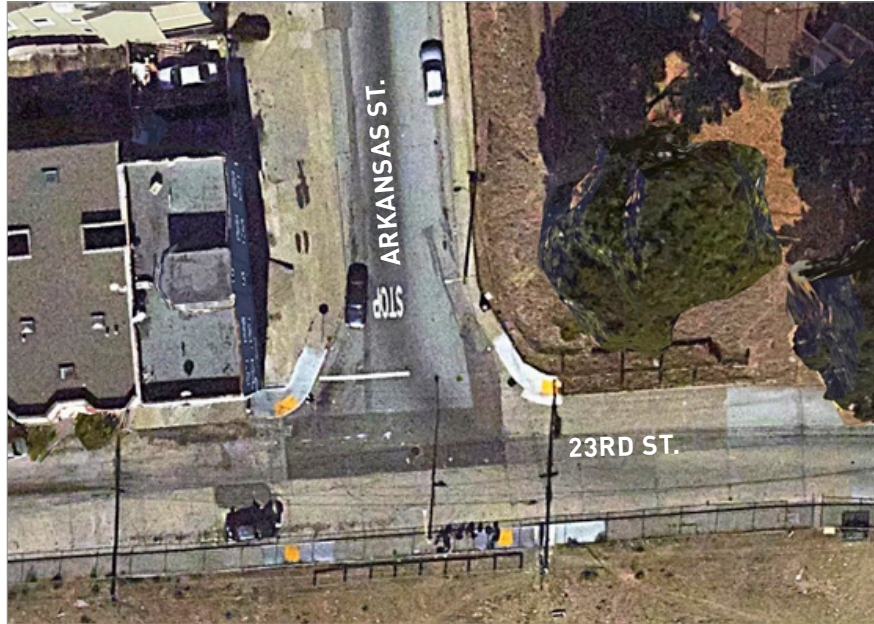


FIGURE 2-21. CONCEPT FOR 23RD AND ARKANSAS STREETS



MISSOURI STREET AND WATCHMAN WAY

The intersection of Missouri Street and Watchman Way is in the center of the Potrero Terrace and operates as a gathering space for two walking school buses. Given the angle of the street, shown in Figure 2-22, and the nearby topography, vehicles tend to travel at high speeds through the intersection, and narrow sidewalks on the east side of the street create limited gathering spaces for pedestrians. The intersection is not controlled by any stop signs or lights.

Community members highlighted the intersection as an important target for traffic calming and improved pedestrian comfort. Because the intersection is a meeting place for the walking school bus, they also noted that elements of the intervention should allow for pedestrian gathering and seating.

Figure 2-23 shows the concept for the intersection, which includes small bulbouts on the northeastern and southeastern corners and uses a combination of planters and seats to make the pedestrian experience more comfortable. The bulbouts square Watchman Way off with Missouri Street, which increases legibility for pedestrians and naturally forces cars entering the intersection from Watchman Way to slow down. The concept also proposes adding a stop sign on Watchman Way.

FIGURE 2-20. EXISTING CONDITION AT 23RD AND ARKANSAS STREETS

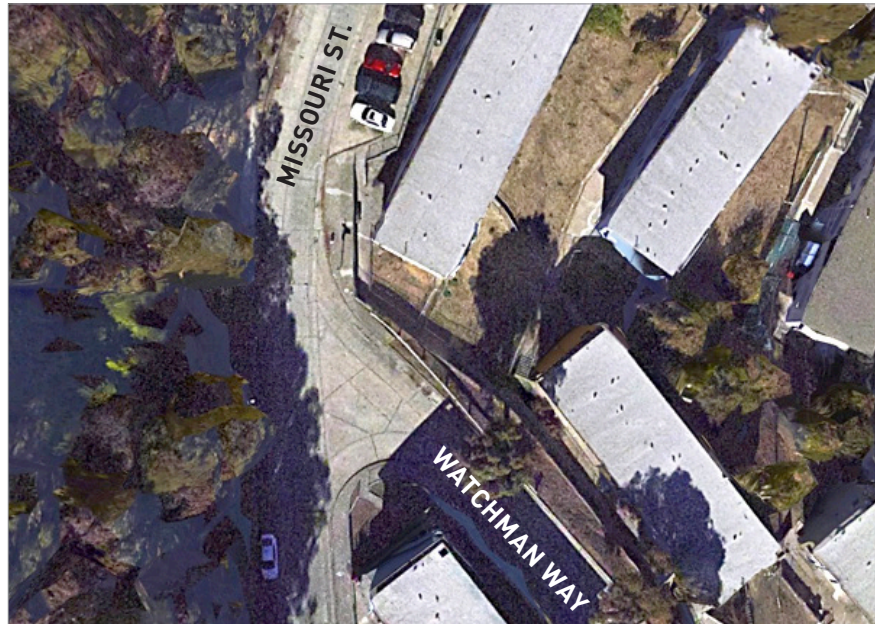
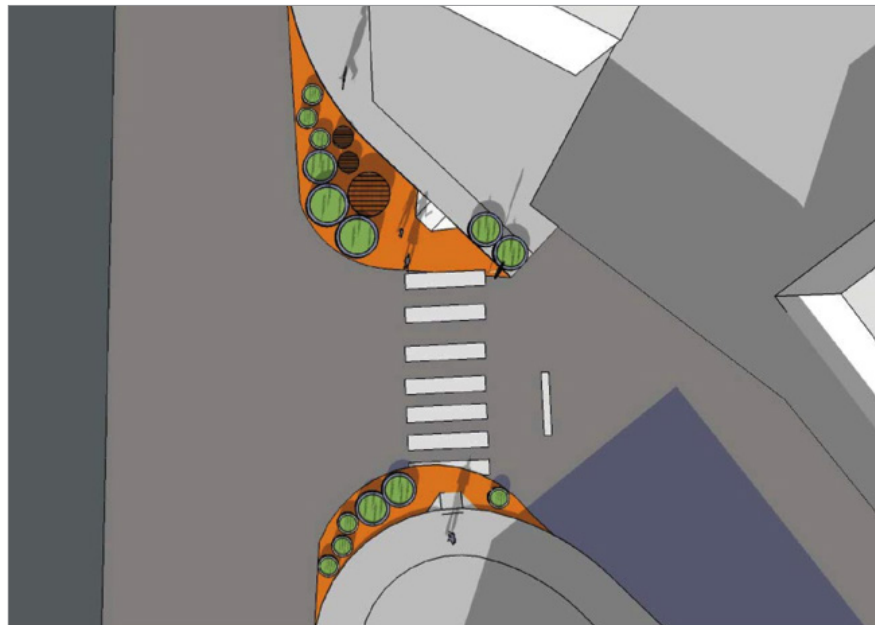


FIGURE 2-21. CONCEPT FOR 23RD AND ARKANSAS STREETS



Parking Impacts

Figure 2-24 shows the potential parking impacts of the proposed interventions. Parking-space length is based on MTA guidelines for mid-block spaces. Note that Texas Street currently has perpendicular parking, requiring fewer feet of curb per space. While the table indicates parking losses noted for 23rd Street, few cars park in these spaces today.

Other Concerns

AMERICANS WITH DISABILITIES ACT (ADA)

The Americans with Disabilities Act (ADA) dictates that curb ramps must be installed at all pedestrian crossings. As such, new crosswalks cannot be added without installing ramps, which can require completely rebuilding sidewalks at corners. Doing so would make this project significantly more expensive, making moot the use of temporary materials to reduce cost.

There are two potential approaches that would help keep costs manageable. Each of these approaches will need to be fully vetted to ensure it complies with all relevant regulations.

- Install temporary curb ramps that stick out from existing curbs at key places (see examples in Figures 2-25 and 2-26). These can be made from plastic, metal, or concrete, and they can incorporate appropriate drainage features. The legality of such temporary ramps will need to be fully explored if this is the approach selected.
- Using a more flexible ADA standard called “program access,” it may be possible to direct people in wheelchairs to existing nearby curb cuts, though this may require eliminating several off-street parking spaces

FIGURE 2-25. TEMPORARY CURB RAMP



Source: <http://www.handiramp.com/curbcutramps.htm>

FIGURE 2-24. PROJECTED PARKING IMPACTS

STREET	SEGMENT	CURB LENGTH	FT. PER SPACE	SPACES
25th Street	South side, Connecticut-Mississippi	210	20	10*
23rd Street	South side, Arkansas to Missouri	160	20	8
23rd Street	North side, Arkansas to Missouri	230	20	11**
Arkansas Street	East Side	40	20	2
23rd Street	North side, west of Arkansas	30	20	1
Dakota Street	West side, at Missouri	120	20	6
Watchman Way	Corner	50	20	2
Texas Street	East side, at 25th [perpendicular]	50	9	5
Total				45

* These spaces are unregulated, and used primarily for long-term parking by trucks not associated with the neighborhood.

** Due to a lack of sidewalk and land uses on the north side of the 23rd street on this block, these parking spaces are seldom used.

to which the ramps currently provide access. From the U.S. Department of Justice’s guidelines: “For pre-ADA highways, streets, roads, and sidewalks that have not been altered, state and local governments may choose to construct curb ramps at every point where a pedestrian walkway intersects a curb. However, they are not necessarily required to do so. Under a more flexible standard called ‘program access,’ alternative routes to buildings may be acceptable where people with disabilities must travel only a marginally longer route than the general public.”⁴

⁴ United States Department of Justice, Civil Rights Division. “Americans with Disabilities Act Toolkit for State and Local Governments.” Retrieved from <http://www.ada.gov/pcatoolkit/chap6toolkit.htm> on 5/13/14.

FIGURE 2-26. TEMPORARY RAMP WITH DRAINAGE SPACE



Source: <http://www.theworkplacedepot.co.uk/plastic-kerb-ramp>

DRAINAGE

None of the proposed interventions would have an adverse impact on drainage. Elements like temporary curbs never extend all of the way to the curb line, leaving normal gutter space. Certain designs of potential additional interventions, like temporary bus platforms and the temporary curb ramps discussed in the previous section, could have an impact on water flow. Drainage would be an important factor to consider in selecting the right products.

PROJECTED COSTS

Costs were estimated based on the conceptual designs. Figure 2-27 details estimated costs by phase. Detailed estimates of material costs can be found in Appendix E. The total estimated cost is approximately \$475,000 for the five intersections.

FUNDING AND IMPLEMENTATION

In the fall of 2014, the Planning Department agreed to lead final design and implementation of the project through its Pavement to Parks Program, which focuses on near term, non-traditional projects. As the lead agency, the Planning Department will seek all necessary approvals and permits and oversee construction, anticipated in late 2015. The SFMTA will review drawings and assist in the creation of any new guidelines triggered by the project. The Planning Department may contract with the SFMTA and/or SF Public Works to construct the project. BRIDGE Housing will extend its community gardening program contract with the Parks Alliance in order to maintain the new infrastructure.

At its meeting on February 24, 2015, the Transportation Authority recommended this pedestrian improvement and traffic calming project for \$375,854 of Lifeline Transportation Program funds for final design and construction. The Metropolitan Transportation Commission (MTC) approved allocation of Lifeline Transportation Program funds for the project at its meeting in April, 2015. Combined with an in-kind match of staff time, the project would only seek \$60,000 to complete the funding plan. The SFMTA has identified Prop K as a potential source, and full funding is anticipated by the end of July 2015. At the same time, BRIDGE Housing anticipates operational funding to extend its community gardening contract with the Parks Alliance.

CONCLUSIONS

The City can do a lot to mitigate for the auto-oriented nature of the original Potrero Annex and Terrace design through the temporary infrastructure interventions at five intersections shown in this chapter. These low-cost designs with short implementation timelines can help improve the safety and comfort of current residents of the project while they wait for the phased implementation of the Rebuild project, which will significantly improve pedestrian conditions through more pedestrian-oriented streets organized in a more regular grid. By creating gathering spaces and reflecting the activities that make the Potrero Hill community special, the interventions can also help build community. As with any implementation project, the project team will need to continue discussions with area residents, including neighbors who live outside of the Terrace and Annex sites. The design team plans further outreach to relevant stakeholders before, during, and after potential construction.

FIGURE 2-27. TRAFFIC CALMING CONCEPTS COST OVERVIEW

TASK	COST
1. Environmental Review	\$2,892
2. Design + Review	\$67,419
3. Construction Support *	\$26,512
CONTRACT: **	
4. Design services, Outreach, and Intern Support Through Parks Alliance	\$20,400
6. Construction Management	\$22,150
7. Construction Installation	\$257,370
Contract Contingency	\$80,565
Total	\$477,308

* e.g. engineering labor during construction

** e.g. consultant or construction contractor (construction installation may be undertaken by a City agency)

3. SAFE ROUTES TO SCHOOL

Children are some of the most vulnerable users of the southern Potrero Hill streets, and their journeys to school are both critical and challenging, including several hills and wide intersections. Creating safer routes to Starr King and Daniel Webster elementary schools was a key need that emerged from initial community outreach efforts.

Official Safe Routes to Schools (SRTS) efforts already exist in many San Francisco neighborhoods, and Potrero Hill is no exception with a thriving Walking School Bus program that helps more than a dozen children reach school safely each morning. SRTS programs generally aim to increase non-automobile mode share for trips to and from school, but they have secondary goals of encouraging active lifestyles and helping students get to school on-time.

The traffic calming concepts described in the prior chapter will notably improve the safety and quality of the walking school bus routes as the five prioritized intersections include the start-points for both routes where children gather to start the walk, and key crossing locations. All five intersections are on the walking school bus routes.

This chapter outlines some additional low-cost SRTS programs that could help increase safety and comfort for those walking to school in Potrero Hill. It highlights innovative strategies recently implemented in Marin County (safety) and the City of Santa Clara (visibility).

SAFETY ENHANCEMENTS

The lowest cost strategy for improving safety around schools and along major SRTS routes is to enhance signage and roadway markings. National experts recommend increasing the visibility of crossings and signage in the immediate vicinity of schools, and a community in Marin County has extended the idea into the neighborhoods surrounding schools.



FIGURE 3-1. SCHOOL BIKE ROUTE SIGN

The Town of Fairfax (Marin County) implemented a set of special signs and street mark-

ings along the main school bike route in October 2013. The route, called the Bike Spine, was selected as the safest and most direct bike connection between three schools and a residential area. School bike signs (see 3-1) and green-backed sharrows were installed along the route, which already had stop signs and lights at major intersections along the way. Fairfax officials see the enhanced signage and markings as a way to increase driver awareness of student commuters and to “teach people proper use of the routes determined to be the safest” through the community.⁵

FIGURE 3-2. HIGH-VISIBILITY CROSSWALK



The online Safe Routes to School Guide recommends increased use of signage and markings in the vicinity of schools and at key crossings, though it says “signs should be used judiciously, as overuse may lead to driver noncompliance and excessive signs may create visual clutter.”⁶ Such signs can use a fluorescent yellow-green color that is brighter and more reflective than standard yellow signs, allowing drivers to see them earlier.⁷ Reflective sleeves on sign posts labeled “school” can also increase the signs’ visibility.

Crossings are the parts of school routes with the highest safety risks, and national authorities recommend special signage enhancements for these locations. The American Traffic Safety Association recommends increasing the visibility of crosswalks by using fluorescent yellow-green paint under normal crosswalk markings (see Figure 3-2). Increasing the use of widely implemented strategies like mid-street signs and other standard crosswalk markings is also recommended. Attaching a smaller “school” label to

⁵ Marin County Safe Routes to School. “Fairfax Bike Spine Launched on October 9th.” Retrieved from http://www.saferoutestoschools.org/ross_valley.html on 11/20/13.

⁶ Pedestrian and Bicycle Information Center. “Around the School.”

⁷ American Traffic Safety Services Association. “Putting Safety in the Safe Routes to School Program.” Washington, D.C.: 2006. Page 8.

such signs can help emphasize the vulnerability of pedestrians and bikers in the area. Signs with LED flashers (see Figure 3-3) that activate when people are in crosswalks can also increase visibility, albeit at a slightly higher cost.⁸

PROGRAM VISIBILITY

Increasing marketing and publicity for Safe Routes to School can serve the dual purpose of increasing the number of students taking non-auto modes and increasing awareness of walk and bike commuting among drivers in the school community. San Francisco's Safe Routes to School program already recommends that schools implement a number of national best practices, including bike and walk to school days, walking school buses and bike trains (as already occur in Potrero Hill), and competitions between classes. However, there may be ways to expand promotional activities.

The City of Santa Clara's Safe Routes to School program held a contest in the spring of 2013 that had students create promotional posters about "making it safer, easier, and more fun to walk, bike, or take transit to and from school" using a set of themes identified by program organizers.⁹ Contest winners' posters were put on buses and light-rail vehicles in the area, and winners also received a selection of Safe Routes to School merchandise and official commendation from the city. Program organizers created the contest to raise the profile of Safe Routes to

8 Ibid. Pages 9-18.

9 Santa Clara Safe Routes to School. "Santa Clara Safe Routes to School Poster Contest." Retrieved from <http://santaclarasr2s.org/get-involved/santa-clara-safe-routes-to-school-poster-contest/> on 11/20/13.

School among students during mid-school-year months that tend to be slower for the program, as most of the district's SRTS activities take place in October and May.¹⁰ They also aimed to use the contest and winning posters to increase media attention and publicity and strengthen the program's relationship with the local transit service provider, the Valley Transportation Agency.

The National Center for Safe Routes to School and California Walk to School each have additional marketing and publicity recommendations and materials. The National Center's website includes template posters and flyers for use with local programs,¹¹ and the California program's site includes detailed recommendations on enhancing program visibility and working with teachers to execute poster and publicity contests.¹²

FUNDING AND IMPLEMENTATION

The pedestrian improvement and traffic calming project described in Chapter 2 would include some Safe Routes to School marketing and visibility features (project anticipates full funding in Spring 2015). In particular, a painted line will be designed to connect each of the plazas along the routes of the walking school buses. This line is envisioned

10 Kidd, Christopher and Lauren Ledbetter, Alta Planning. "Santa Clara SR2S Poster Contest." Memo to the Santa Clara Unified School District and the Valley Transportation Agency. Retrieved from <http://santaclaraca.gov/modules/ShowDocument.aspx?documentid=8478> on 11/20/13.

11 National Center for Safe Routes to School. "Every Step Counts Marketing Materials." View at <http://www.saferoutesinfo.org/program-tools/every-step-counts-marketing-materials>.

12 California Walk to School. "October Walk to School Month: Making Banners, Posters, and Signs with Students." View at <http://www.caactivecommunities.org/wp-content/uploads/2011/09/Making-Banners-Posters-and-Signs-with-Students.pdf>.

FIGURE 3-3. FLASHING SIGNS



FIGURE 3-4. POTENTIAL CHINESE NEW YEAR THEMED INTERSECTION AT 25TH AND CONNECTICUT



to have varying widths, patterns, and other characteristics that will raise the profile of the routes and hopefully draw attention to the great program already underway in the housing sites. In addition, design details from the intersection improvements (e.g., bike reflectors, themes such as Chinese New Year—see Figure 3-4, previous page). are anticipated to include input from school children to enhance their association with the walking school bus and will serve to draw attention to the key nodes along the routes. Once implementation is complete (anticipated in late 2015), further programmatic improvements could be made to the routes, and community health leaders who “drive” the walking school buses have discussed potential funding sources for these improvements with the SFDPH Safe Routes to School coordinator.

CONCLUSION

With a thriving Walking School Bus, the Potrero Hill community has already implemented some important Safe Routes to Schools programs. A combination of strategies that improve the visibility of the program could take it to the next level.

Bay Area Safe Routes to Schools programs have recently implemented new strategies to increase safety and program visibility, and both could be useful and low-cost additions to programs in the Potrero Hill neighborhood. The Fairfax bike spine improvements in particular could be a useful model for extending school safety zones along key non-motorized access routes without making major infrastructure investments like changing curb lines or creating bike- or pedestrian-only facilities. Promotional activities like Santa Clara’s poster contest could also increase program participation and visibility overall.

4. PATHWAY IMPROVEMENTS AND LIGHTING

Southern Potrero Hill has relatively weak connections to surrounding neighborhoods, but a set of walking paths provide some pedestrian connectivity where roads do not, both through the site and to areas north and east. Lighting along these pathways is limited, and as such, they are only useful during the day, particularly for more vulner-

FIGURE 4-1. PATHWAYS CREATING IMPORTANT CONNECTIONS



able community members. The Potrero Hill NTP aimed to increase visibility and safety on these pathways to make these connections more useful during early morning and evening hours.

CONTEXT

Figure 4-1 shows where these pedestrian pathways, called the “cuts” and the “straightaway,” are located. One pathway runs just to the northeast of the Potrero Hill Recreation Center, beginning behind Potrero Terrace buildings on the west side of Missouri Street. The pathway splits to the north of the recreation center, making connections with Connecticut Street to the north and Arkansas Street to the west. Only parts of the pathway are paved.

Community members noted that the pathway creates an important connection to the Recreation Center. It is also a much-used route to Daniel Webster School, which is lo-

cated at the corner of 20th and Missouri streets. While Missouri Street is a more direct route, its topography—descending into a small valley before rising to the apex of Potrero Hill—makes the slightly longer route via the “cuts” and Connecticut Street a more attractive option. Figure 4-2 (next page) shows the Walking School Bus using this route.

While there are light fixtures on the western portion of the path, closest to Arkansas Street (shown in Figure 4-3), it is mostly unlit. Community members indicated that additional light fixtures would make this important connection feel safer. The pathway is on land owned by the San Francisco Recreation and Parks Department.

FIGURE 4-2. WALKING SCHOOL BUS ON PATHWAY



FIGURE 4-3. PORTION OF THE “CUTS” WITH LIGHT FIXTURES



A dirt pathway up from 22nd and Missouri Streets also connects to the “cuts,” and strengthening this connection could further improve east-west connectivity on this northern portion of the Study Area. Initial drawings for a development at 1395 22nd Street include a paved and landscaped stairway down to the intersection of Texas and 22nd streets, near the 22nd Street Caltrain station, which could further improve connectivity in this area.

FUNDING AND IMPLEMENTATION PLAN

At its September 2014 meeting, the Eastern Neighborhoods CAC voted to recommend the allocation of \$150,000 in developer impact fees to the project, thereby fully funding it. Since the project is on San Francisco Recreation and Parks Department Property, they would lead final design and implementation, which is anticipated in 2015.

FIGURE 4-4. “CUTS” LIGHTING PROJECT COST OVERVIEW

TASK	COST
1. Poles	\$ 40,000
2. New Service	\$ 5,000
3 Conduit	\$28,000
4. Pull Box	\$6,000
5. Overhead	\$19,750
6. Construction Contingency	\$11,850
7. Soft Cost	\$26,070
8. Overall Contingency	\$13,380
Total	\$150,000

CONCLUSION

The “cuts” create an important connection between the Study Area and important community resources to the north and west. Community members expressed an interest in installing more lighting to make those connections feel more comfortable, and the NTP was able to secure funding to fill this need.

5. COMMUNITY SHUTTLE

The Potrero Annex and Terrace community identified improvements in circulation around the project site and between the site and neighboring areas as a critical need. With its hilly topography and limited number of entry and exit points, it can be difficult to get around the site, and non-auto connections to commercial and employment centers can be arduous.

The Study Area is served directly by several Muni lines today, and residents cited the 22 as an important connector to the Mission and BART. However, Muni Forward will eliminate one of the lines that provides direct service, and it will move the 22 route several blocks north of its current path through northern Potrero Hill to the 22nd Street Caltrain station, making it much less convenient for residents. Muni also recently eliminated a community route, the 53, which provided residents a valued connection to the central Mission.

With this context in mind, the Potrero Hill NTP explored the possibility of creating a shuttle service that could en-

hance circulation through the site and improve connections to the surrounding area and high-capacity regional transit systems.

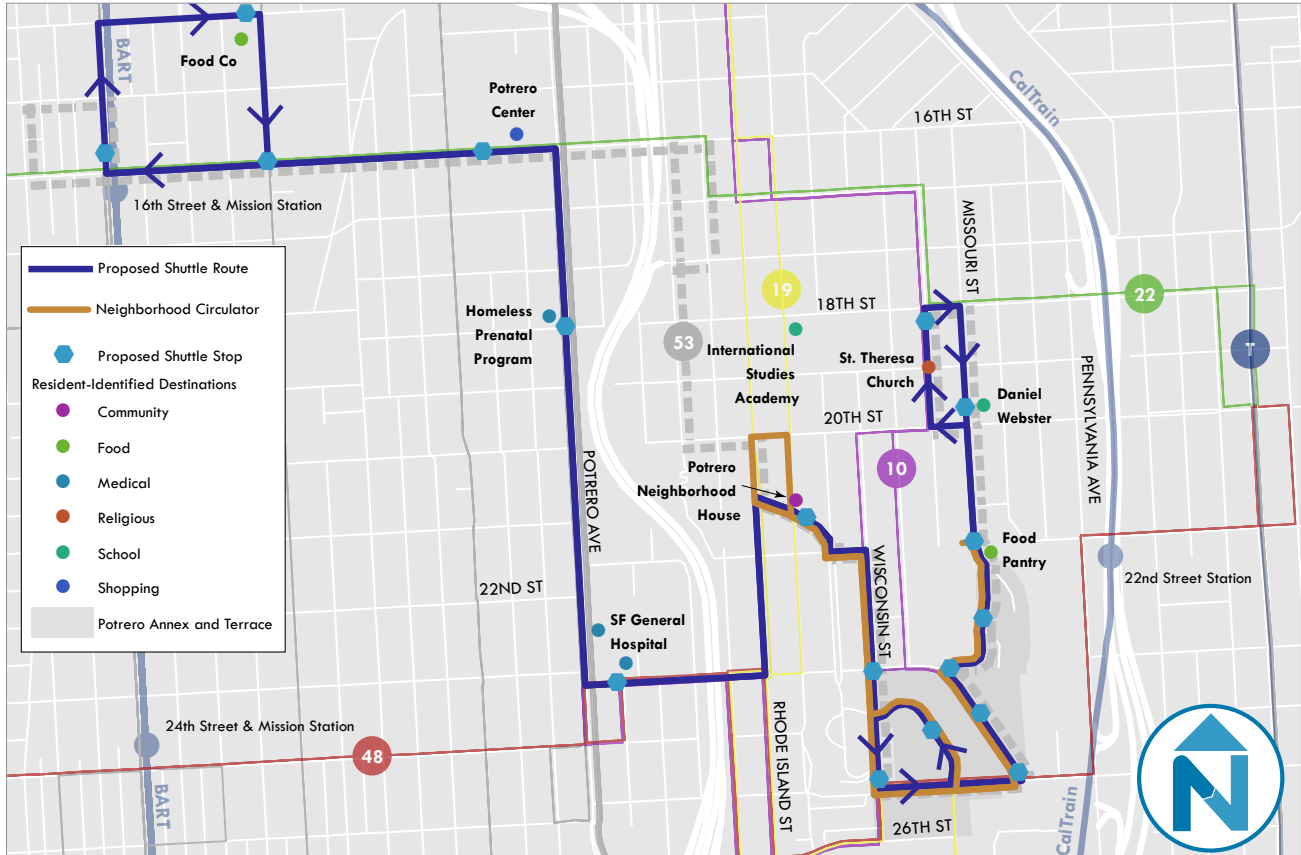
SHUTTLE ROUTES

The project team created two shuttle alternatives. One would provide regular circulation through the site and the other would extend the service up Potrero Avenue and west along 16th Street to the BART station at Mission Street. Figure 5-1 shows the alternatives, and the following sections describe them. The figure also indicates important trip destinations outside the Potrero development site.

Circulator

The circulator (in orange in Figure 5-1) would provide service between the Food Pantry on the east side of Potrero Hill to the Neighborhood House, with a route serving all major streets through the site. The route is envisioned making nine stops along its course. The route is long enough to provide circulation through the site while being

FIGURE 5-1. POTENTIAL SHUTTLE WITH EXISTING MUNI NETWORK



short enough to allow one vehicle to serve the route every 30 minutes with 10 minutes of driver break time per hour.

Full Shuttle Route

The full shuttle route is designed to give residents a one-seat ride to many of the important destinations identified by neighborhood residents within a reasonable radius of the site. It was largely modeled after the 53 bus route.

The proposed shuttle route roughly follows the route of the former Muni line 53 with two exceptions. Stakeholders identified additional important destinations along Potrero Avenue, in particular SF General, and the FoodsCo grocery store at 14th and Folsom Streets; the route diverges from the old 53 to serve these destinations.

The shuttle route is as follows:

- The westbound run would start at the corner of 18th and Connecticut streets, go through the development site via Connecticut Street (turning right at Wisconsin Street), travel along Wisconsin, 22nd Street, Southern Heights Street, Rhode Island Street, 23rd Street, Potrero Avenue, and 16th Street, completing its run at the corner of 16th and Mission streets.
- The eastbound run would start by traveling northbound along Mission to 14th Street, eastbound on 14th to Folsom Street, and southbound on Folsom back to 16th, mirror the westbound route back to the project site, follow Wisconsin and 25th streets through the project site, and complete its run back at 18th and Connecticut streets.

SHUTTLE SERVICE PLANS AND OPERATING COSTS

The project team also estimated the travel times and costs of each of these alternatives and created a cost-projection tool, included in Appendix E, to help local staff estimate capital and annual operating costs of different route alternatives.

The circulator route would require an estimated 15 minutes of drive time and six minutes of dwell time. With the return trip and layover, the full cycle time would be 52 minutes. Like the full shuttle service, the circulator would still require two vehicles to provide service every 30 minutes. Circulator service might provide more reliable scheduled service given the shorter route length and the exclusion of streets with higher levels of congestion, including northern Potrero Avenue and 16th Street.

Based on a driving and timing exercise conducted on the morning of March 4, 2014, the full route is estimated to take 25 minutes each way (including 18 minutes of travel time and 30 seconds of dwell time for each of the 14 stops in each direction). The shuttle also has to allow for 10 minutes of layover for driver breaks during each cycle. This conveniently creates a 60-minute cycle time which allows for predictable scheduling throughout the day that would enable riders to count on a bus arriving at a certain time each hour or half hour, pending service plan details. This was further validated by comparison to the 53 scheduling, which was very similar.

Sample Service Plan

The project team developed several sample service plans and estimated the costs of providing different levels of service. The cost-projection tool also allows staff to compare the cost of contracting out the service to the cost of purchasing vehicles and administering the service in-house.

Cost estimates for contracted service are based on the *SamTrans Community Transit Guide*, inflated to 2014 values. The guide's adjusted costs range from \$70 to \$96 per hour, including vehicles, drivers, insurance, maintenance, a storage and maintenance facility, and fuel. Cost estimates for in-house service are based on a combination of the *Community Transit Guide* and used-vehicle capital cost estimates from the Alliance Bus Group, a national bus dealer.

Figure 5-2 summarizes the estimated costs of several scenarios. Full shuttle service would be more expensive to

FIGURE 5-2. ANNUAL OPERATING AND CAPITAL COSTS, FULL SHUTTLE/CIRCULATOR SERVICE ALTERNATIVES

ROUTE TYPE	SERVICE SPAN	HEADWAY	CONTRACTED COST	IN-HOUSE COST
Full Shuttle	9 am–6 pm daily	1 hour	\$230,000–\$320,000	\$150,000 + \$25,000 Capital
	7:30 am–7:30 pm, Monday-Saturday	1 hour	\$260,000–\$350,000	\$170,000 + \$25,000 Capital
	9 am–6 pm daily	30 minutes	\$460,000–\$630,000	\$310,000 + \$50,000 Capital
	7:30 am–7:30 pm, Monday-Saturday	30 minutes	\$510,000–\$710,000	\$350,000 + \$50,000 Capital
Circulator	9 am–6 pm daily	30 minutes	\$230,000–\$320,000	\$160,000 + \$25,000 Capital
	7:30 am–7:30 pm, Monday-Saturday	30 minutes	\$260,000–\$350,000	\$180,000 + \$25,000 Capital

provide given the longer route (3.8 miles each way for the full shuttle versus 1.27 miles each way for the circulator service). For in-house service, 30-minute headways would require twice the up-front capital cost given the need for two vehicles to provide that frequency of service.

FUNDING AND IMPLEMENTATION PLAN

Given the high levels of ongoing funding needed to run either shuttle or circulator service, site-specific transit services are unlikely to be implemented in the immediate term. However, BRIDGE Housing will continually monitor potential funding sources and continue ongoing conversations with the SFMTA on how such a service might be implemented. Non-traditional transportation funding sources, such as private foundations, should be considered in addition to those programmed by local, regional, state, and federal agencies.

CONCLUSION

A new private transit service is unlikely to be implemented in the immediate term, but the Potrero Hill NTP sets up local organizations to move forward quickly on such a service should ongoing funding become available. The route and service plans outlined in this chapter reflect community members' expressed needs and present a range of options for enhancing connectivity within the site and to important destinations in the surrounding area.

6. CONCLUSION

The Potrero Hill NTP took a unique approach. The Study Area encompassed a public housing development that is slated to be rebuilt from the ground up starting in just a few years, making large-scale transportation infrastructure investments unwise in the short term. The area's transportation conditions have been extensively studied in recent years, making the detailed examination of existing conditions that usually comes with a study like

this unnecessary. Based on these two factors, the NTP set out to quickly identify low-cost, short-term projects that could improve the lives of those living on the site right now as they wait for the larger-scale changes that will happen through the Rebuild Potrero effort.

Two key ideas developed as part of the NTP have received or been recommended for implementation funding:

- Lighting for an important pedestrian connection between the site and the school and recreation center to its north and east.
- Temporary infrastructure traffic calming, pedestrian safety, and bus stop improvements at five intersections that will slow traffic through the site and make students' journeys to school safer and more comfortable.

In addition, the stairwell between Texas and Missouri streets has been incorporated into the project design for the proposed 1395 Pennsylvania Avenue. The study readied other ideas for implementation when funding comes available. These concepts include a shuttle that would make traversing the hilly project site and accessing retail and employment opportunities in the surrounding area easier and enhancing the neighborhood's already robust Safe Routes to School program.

Over the next 10 to 20 years, Rebuild Potrero will make the site a denser, less isolated site that is easier to traverse. The NTP can help ensure that, in the meantime, getting around is a bit easier and safer for Potrero Annex and Terrace residents. Materials from the temporary treatments (e.g., decorated manholes, plantings, etc.) can be moved to other sites around the City and reused for other projects. Finally, treatments such as the temporary bus bulbs could be replicated by the SFMTA as a way to deliver low-cost transit improvements. In these ways, the treatments implemented in the near term will have long-lasting utility for San Francisco as a whole even after Rebuild Potrero is complete.