



## **SUMMARY OF NACTO RECOMMENDATIONS ON MIDDLEFIELD ROAD REDESIGN: BASED ON DESIGN CHARRETTE**

The National Association of City Transportation Officials (NACTO) and Nelson\Nygaard Associates conducted an applied street design charrette with forty public officials and city staff from around San Mateo County focused on Middlefield Road in unincorporated North Fair Oaks. In this memo, the NACTO team builds upon the suggestions of the charrette participants (see appendix A) and offers best practice design recommendations. These recommendations seek to maximize implementation of safe, multi-modal street design and guidelines in the North Fair Oaks Community.

### **Middlefield Road in North Fair Oaks**

Middlefield Road is identified as the most important street in the North Fair Oaks Community Plan. The neighborhood is ethnically diverse, predominantly low-income and home to a high number of Latinos, youth and elderly. It is a corridor that possesses many of the hallmarks of a traditional main street and serves pedestrians, bicyclists, transit users, and automobile drivers. The strong entrepreneurial spirit of the North Fair Oaks community is visible in the range of locally-owned ethnically diverse retail and service businesses along Middlefield Road and residents have expressed a strong interest in building on and expanding these business opportunities.

The streetscape redesign project is expected to improve the economy of the North Fair Oaks Community through new retail, increased foot traffic to existing retail, and more office and housing developments. In addition, the improved circulation and connectivity for all modes of travel, especially pedestrian, bicycle and public transit, will increase safe physical activity and social interactions through the use of the corridor as a public space.

### **There are many opportunities to redesign Middlefield Road and make it better for everyone: Recommendations based on NACTO guidelines**

*Figures 1 and 2 provide two design options showing the cross-sections of the redesigned Middlefield Road with the design recommendations described below.*

**Sidewalks:** The absolute minimum functional width for retail sidewalk is 10', though 12' is a better minimum, and 15' is a preferred dimension. The street cross sections below provide 12'—15' sidewalks as the starting point for good design. This dimension accommodates healthy canopy trees sufficient to create continuous shade along the sidewalks.

- ~ Enough space for two people to walk side-by-side. Six feet of continuous clear zone is needed.
- ~ Room for street trees, street lights, utility boxes, signal poles, and other utilities. This “furnishings” zone typically requires 3—5'.

- ~ An edge zone to accommodate car doors opening and other street furniture. This area needs about 18" and can overlap somewhat with the furnishings zone.
- ~ Some space in front of businesses for café seating, sandwich board signs, and door swing. As little as 2' accommodates a café table.

**Parking:** Diagonal parking should be converted to parallel. 8' is a comfortable dimension, particularly next to a bike lane.

**Bikeway:** Parking-protected bikeways are the ideal solution for these types of corridors, yet on Middlefield Road, wider sidewalks are a higher priority because of the existing pedestrian volumes and lack of public space. Moreover, this stretch of Middlefield Road connects to conventional bike lanes at either end. A 6' striped bike lane with a 1'—2' buffer may be appropriate in this context.

**Travel lanes:** Middlefield Road is a significant truck and bus route, so travel lanes between 10 ½'—11' wide, one in each direction, are recommended. This decreases speeds, increases safety, and allows important street real estate for adequate sidewalks, bike lanes and design elements discussed in this section.

**Median and turn pockets:** A planted center median with left turn pockets at intersections may be a positive application for this corridor. This median should be planted with large-caliper canopy trees.

**Corner bulbouts:** Most intersections should be rebuilt with corner bulbouts to shorten pedestrian crossing distances. Further traffic analysis may suggest some intersections may need right turn pockets, in which case the bulbouts would be modified to accommodate. On 5<sup>th</sup> Avenue, it may be useful to stripe additional lanes at Middlefield in order to expand motor vehicle capacity.

**Signals:** Additional traffic analysis should be undertaken with an eye towards installing more closely-spaced traffic signals to make it easier for pedestrians to cross Middlefield Road, and to facilitate left turns from the cross streets.

**Off-street parking:** Most of the businesses along Middlefield have small areas of parking in the back, but fences separate these lots, and spaces are reserved for customers of individual businesses. The County should

- ~ Work with business owners to create shared parking agreements among neighboring businesses, taking advantage of how different businesses have peak parking demand at different times of day.
- ~ Where feasible, establish alleyways behind businesses by removing the fences that separate their back parking lots.

**Public realm and Flexible Zones:** Plazas and well-designed private patios/sidewalk cafes are crucial to enhance the pedestrian environment. This can be made possible through "flexible zones", areas that can serve as tree-shaded curbside parking or as-needed outdoor seating at restaurants and cafes, sidewalk vendor activities, and locations for vendors or kiosks during special events. Coupled with custom furnishings, street-specific design elements and a variety of paving materials, such areas are able to accommodate a variety of different uses while lending a very distinct and unique district identity and creating a lively and thriving pedestrian environment.

**Trees Plantings:** Planting trees in the parking lane helps alleviate sidewalk crowding and maintain a clear path of travel for pedestrians. It also reduces the actual and visual width of the roadways, thereby slowing traffic. Since the public realm on Middlefield already suffers from constrained dimensions and there is also a desire to slow traffic, trees and plantings should potentially be located in the parking lane.

**Lower speeds:** A road diet and signal timing can reduce speeds create a safe, appealing environment for bicyclists and pedestrians. Prioritize walking, bicycling and transit by adding leading pedestrian intervals, synchronized signals for bicycles, and transit signal priority. Shorter signal cycle lengths minimize delay and reduce wait times, creating more frequent crossing opportunities for pedestrians, and synchronizing signals at or below the target vehicle speed will discourage speeding. This is in addition to a road diet, which is critical to ensuring lower speeds.

## Steps towards implementation

**Interim Infrastructure:** Implementation of the road redesign will take several years to complete. Interim design strategies can realize results more quickly, building community support for a project and testing the new design before a full reconstruction. Sidewalks can be expanded using interim materials, such as epoxied gravel, planter beds, and bollards. Interim bulbouts can also use these temporary, low-cost materials to calm traffic in the near term, and a road diet may be applied solely with striping in the near term, before an eventual reconstruction with medians and plantings.

**Prevent displacement of current residents:** Investments in street design and neighborhood improvements in North Fair Oaks are critical. These types of improvements increase the desirability of neighborhoods and will likely drive interest in the neighborhood from higher income residents. Ensuring protection for existing residents, many of who are low-income and will not be able to absorb increased rents, will be imperative to limit involuntary displacement. This is also true for commercial properties where local small business owners currently rent space. Residential and commercial tenant protections should be put in place to discourage and minimize evictions that are not just-cause. Small businesses will also need financial support to weather the extensive construction period along Middlefield Road.

**Create an Appetite for Change:** A lack of willingness to remove parking, reduce travel lanes, and introduce more progressive transportation policies are a major deterrent to multimodal design. Middlefield Road has the public right of way to realize the aforementioned improvements and the NACTO guidelines provide the engineering guidance and practice that is technically required.

## Achieving the community vision

Collectively, the Middlefield Corridor improvements will be a big step towards fulfilling the vision of a vibrant North Fair Oaks Community that offers:

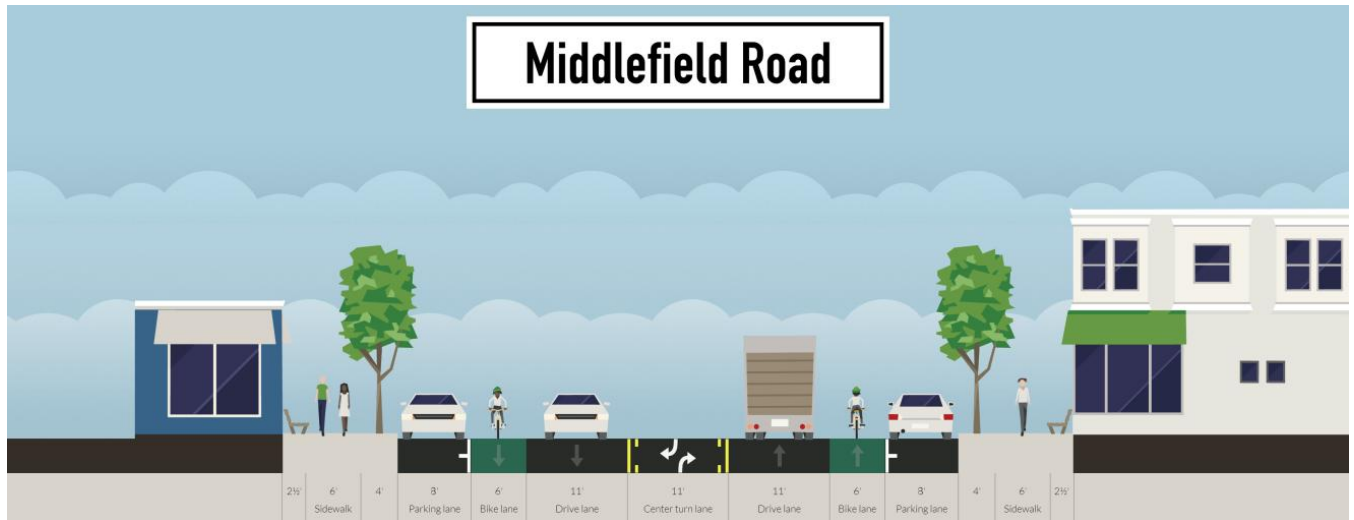
*“safety, adequate services, sufficient housing, recreational opportunities, access to jobs and healthy foods and provides opportunities for all residents to be healthy and have a high quality of life<sup>1</sup>.”*

Delivering on this vision requires innovative street redesign, careful planning and attention to the vulnerabilities of the existing residents from the potential of residential and commercial displacement.

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<sup>1</sup> North Fair Oaks Community Plan, 2011

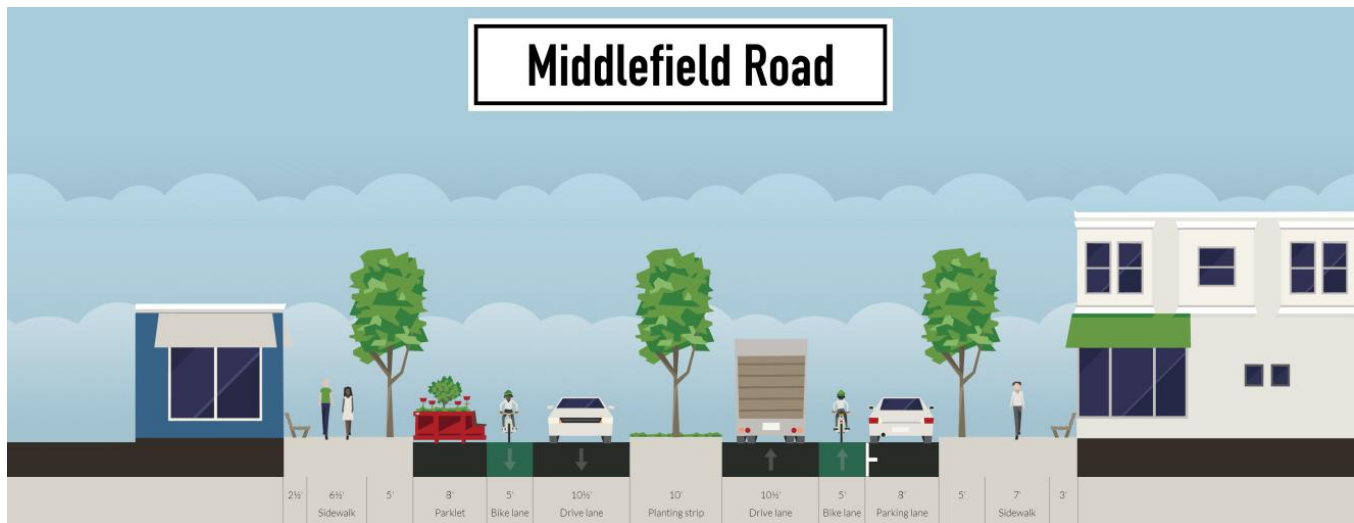
**Figure 1: Three Lane Roadway with Bike Lanes**



Source: Nelson\Nygaard

Option 1 shrinks the sidewalks to the functional minimum (12 ½') in order to provide 11' travel lanes and 6' bike lanes, while presenting a three lane roadway with parallel parking on both sides. A three-lane cross-section would be sufficient to carry current Middlefield Road traffic volumes, i.e. 800 vehicles in the peak hour and approximately 10,000 all day.<sup>2</sup>

**Figure 2: Two Lane Roadway with Bike Lanes, Wider Sidewalks and Landscaped Median**



Source: Nelson\Nygaard

Option 2 shrinks the bike lanes (5') and travel lanes (10 ½') to the functional minimum in order to provide a more preferred sidewalks width (14'), including room for outdoor restaurant seating. It accommodates flexible parking lanes that make room for parklets as well as vehicles.

<sup>2</sup> North Fair Oaks Community Plan Update (Existing Traffic Conditions)

## Appendix A: Summary of Current Challenges and Recommended Design Improvements Identified by Charrette Participants

The chart below synthesis the on-site observations and key takeaways from the Middlefield Road design charrette to inform the redesign process currently underway in North Fair Oaks.

<b>Challenges</b>	<b>Retrofit Opportunities</b>
<p><i>Pedestrians</i></p> <ul style="list-style-type: none"> <li>~ Narrow, constrained sidewalks makes walking abreast challenging.</li> <li>~ Pedestrians squeezed between the diagonal parking and the storefronts.</li> <li>~ Long pedestrian crossing distances.</li> <li>~ Lack of pedestrian visibility at intersections.</li> <li>~ Lack of shade, trees, or green infrastructure, amenities, seating, etc.</li> </ul>	<p><i>Pedestrian</i></p> <ul style="list-style-type: none"> <li>~ Wider sidewalks and addition of sidewalk amenities including shade trees, seating, etc.</li> <li>~ Addition of curb extensions, safety features, and shortening of crossing distances.</li> </ul>
<p><i>Bicycle</i></p> <ul style="list-style-type: none"> <li>~ Lack of dedicated, marked bicycle infrastructure and lanes and poor pavement quality.</li> <li>~ Conflicts between cyclists and diagonally-parked vehicles.</li> </ul>	<p><i>Bicycle</i></p> <ul style="list-style-type: none"> <li>~ Fill gap in bikeway system on Middlefield Road in North Fair Oaks.</li> <li>~ Designation of Protected or Conventional Bike Lanes.</li> </ul>
<p><i>Transit</i></p> <ul style="list-style-type: none"> <li>~ Buses were observed as a consistent presence on Middlefield, but few transit specific design accommodations are present - Inadequacies in design surrounding transit stops, including a lack of shelter, accessible boarding areas or safe pedestrian crossings.</li> <li>~ Transit vehicle delays due to insufficient stop length and shallow bus stop design, exacerbated by illegally parked diagonal vehicles.</li> <li>~ Transit delays due to signalization.</li> </ul>	<p><i>Transit</i></p> <ul style="list-style-type: none"> <li>~ Construction of bus bulbouts to minimize person-delay caused by bus delay when merging back into traffic.</li> </ul>
<p><i>Motor Vehicles</i> <u>Travel Lanes</u></p> <ul style="list-style-type: none"> <li>~ Four travel lanes on Middlefield Road not consistent with travel lane patterns north and south of project area.</li> <li>~ Motor vehicle operating speeds inappropriate for context.</li> <li>~ Long distances between traffic signals, resulting in high speeds and long queues at</li> </ul>	<p><i>Motor Vehicles</i> <u>Travel Lanes</u></p> <ul style="list-style-type: none"> <li>~ Road Diet and addition of center turn lane; reduction in number of overall travel lanes to a three lane cross-section and reduced travel lane widths.</li> <li>~ Addition of new signals along the corridor and adjustment of signal timing at intersections to reduce the “platoon”</li> </ul>

<p>5th Avenue.</p> <ul style="list-style-type: none"> <li>~ Intersection delay and long cycle lengths.</li> <li>~ Disorganized roadway lanes and poor pavement quality.</li> </ul> <p><u>Parking</u></p> <ul style="list-style-type: none"> <li>~ Inefficient curbside management.</li> <li>~ Diagonal parking egress encroaches on adjacent travel lane.</li> <li>~ Loading vehicles parked at corners or in the travel lanes, obstructing the visibility of pedestrians.</li> </ul>	<p>effect i.e. dense clusters of cars followed by long gaps of little or no traffic.</p> <p><u>Parking</u></p> <ul style="list-style-type: none"> <li>~ Shift from diagonal to parallel parking.</li> </ul>
<p><i>Urban design and additional Challenges</i></p> <ul style="list-style-type: none"> <li>~ Current street conditions make it impossible to interact with businesses and active storefronts in a meaningful way.</li> <li>~ Frequent parking lots and undefined space at corners i.e. poor street corner articulation with lack of public space</li> <li>~ Façade obstruction due to diagonal parking and narrow sidewalks.</li> <li>~ Lack of façade permeability.</li> <li>~ Incompatible street furniture and lighting.</li> </ul>	<p><i>Additional Recommendation</i></p> <ul style="list-style-type: none"> <li>~ Transform the geometry and configuration at intersections through enhanced pedestrian infrastructure and amenities, such as street trees, wider sidewalks, and curb extensions.</li> <li>~ Form a Business Improvement District to manage and maintain the streetscape.</li> <li>~ Consolidate poorly designed off-street parking lots into a single off-street parking location</li> </ul>