



**Engineering strategies change the built environment to create safer and more comfortable places to walk and/or bicycle.**

Engineering streets so that they are “complete” for roadway users of different ages and abilities is fundamental to making communities safer and more comfortable for those that are walking, bicycling, and rolling (wheelchair, scooters, etc.).

Engineering strategies, including improved facilities, retrofits and speed reduction on roads previously designed only for automobile high speeds and volumes, can dramatically help to reduce the risk and severity of injury for pedestrians and bicyclists. A well-designed system of streets with facilities specifically for pedestrians and bicyclists reduces the high level of stress that many have when having to walk or bicycle in heavy car traffic. When communities are designed for walking and bicycling, more people will feel comfortable walking and bicycling, and our communities will be healthier for it!

Common engineering treatments that promote walking and bicycling include sidewalks, designated bicycle facilities, and high visibility crosswalks. Less familiar and newer treatments include protected bikeways and intersections, curb bulb-outs, rectangular rapid flashing beacons, way-finding signage and bike boxes. Ample guidance\* is available on the myriad of bicycle and pedestrian engineering strategies that may help to make communities more walkable and bike-friendly.

This Fact Sheet highlights common pre- and post-engineering activities, all of which are Non-Infrastructure (NI) activities eligible for reimbursement under the Active Transportation Program. When used thoughtfully and in sequence with engineering design and construction, these activities can enhance public engagement, awareness, and safe and regular use of walking and bicycling facilities.

### **WALK OR BIKE AUDITS**

Walk and Bike Audits are processes that involve the systematic gathering, documentation, and assessment of data on environmental conditions (social, built, and natural) that affect walking and bicycling. Audit results document factors that help or hinder safe walking and bicycling to identify problem areas and make recommendations for improvement.

### **WALKING/BIKING ROUTE MAPS**

Maps can show highlight routes to a given destination that are more amenable to travel bicycle or on foot. Online mapping programs usually offer a bicycle or pedestrian mapping function to help create customized maps for schools, neighborhoods, or broader jurisdictions. City or county walk/bike maps can demonstrate broader walk/bike facility networks for longer trip planning.



## OPEN STREET EVENTS

Open Streets – sometimes referred to as Cyclovias - are community-based events that temporarily restrict selected streets and/or corridors from cars, and ‘opens’ them solely to non-motorized modes of transportation. By doing this, the streets become places where people of all ages, abilities, and backgrounds are encouraged to come out to walk and bike while learning about active transportation safety and health benefits.

## DEMONSTRATION PROJECTS

Demonstration Projects are projects that use temporary materials, such as cones, chalk, and mobile signage, to display, study, or identify the potential of a future permanent facility intended to improve safety among pedestrians and bicyclists in a particular location. Demonstration projects can be a method of gathering feedback from community residents about the proposed facility.

## QUICK BUILD PROJECTS

Quick Build Projects provide an opportunity for communities to apply and test context sensitive designs and configurations within the roadway in areas of immediate need. They present a meaningful way to engage, educate, and encourage people to try new walk or bike-friendly roadway designs, and to incorporate user feedback for changes and improvements before a more permanent infrastructure project is constructed. Barrier elements can include:

- Raised lane separator
- Concrete buttons
- K-71 delineator post
- Parking stops
- K-Rail
- Planter boxes
- Armadillos
- Barricades

Quick Build Projects also help accelerate Complete Streets for all ages and abilities through their rapid installation, more streamlined processes for delivery, and by using less permanent, lower cost, and pre-approved materials that can be more easily removed or replaced.

## \*HELPFUL ACTIVE TRANSPORTATION ENGINEERING GUIDES

- Main Street, California: A Guide for Improving Community and Transportation Vitality. Caltrans. Available at [https://dot.ca.gov/-/media/dot-media/programs/design/documents/main\\_street\\_oct2023-a11y.pdf](https://dot.ca.gov/-/media/dot-media/programs/design/documents/main_street_oct2023-a11y.pdf)
- PedSafe: Pedestrian Safety Guide and Countermeasure Selection System, Federal Highway Safety Administration (FHWA). Available at <http://www.pedbikesafe.org/PEDSAFE/index.cfm>
- BikeSafe: Bicycle Safety Guide and Countermeasure Selection System, FHWA. Available at: <http://www.pedbikesafe.org/BIKESAFE/index.cfm>
- Urban Bikeway Design Guide, National Association of City Transportation Officials. <https://nacto.org/publication/urban-bikeway-design-guide/>
- Small Town and Rural Multimodal Networks, FHWA. [https://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/publications/small\\_towns/page00.cfm](https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/small_towns/page00.cfm)
- Accessible Shared Streets: Notable Practices and Considerations for Accommodating Pedestrians with Vision Disabilities: [https://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/publications/accessible\\_shared\\_streets/](https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/accessible_shared_streets/)



*These definitions are provided as a resource for planning or implementing a Non-Infrastructure (NI) project. For questions, please contact us at [ATRC@dot.ca.gov](mailto:ATRC@dot.ca.gov).*