

MULTIMODAL ACCESS TO EXISTING TRANSIT STATIONS

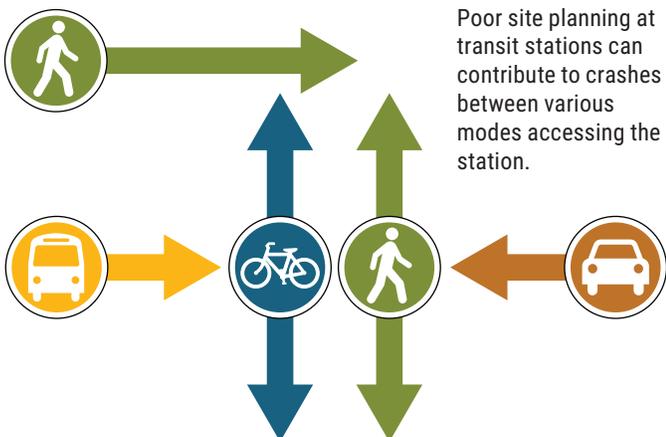
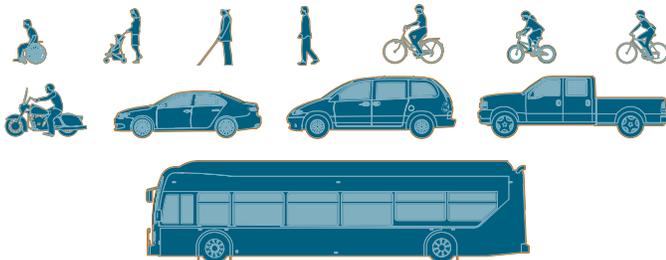


Modal conflicts at transit stations vary depending on the size of the station and nature of transit services provided. Pedestrians and bicyclists may conflict with buses at access points to on-site bus bays or along on-street bus stops. Where passenger car parking garages or lots are provided, car/bike and car/pedestrian conflicts are typical. On station sites and at approaches, conflicts between pedestrians and bicyclists can occur because these users frequently share the same facilities, including sidewalks, pathways, and crosswalks.

To address conflicts through station retrofits, planners and designers should first identify bicycle and pedestrian trip generators and catchment zones in the station's service area. Desire lines and travel routes from each catchment zone can be evaluated for safety, comfort, and convenience. Potential conflict areas can be identified at the station and in surrounding areas.

It is important to minimize and mitigate conflicts in order to increase safety and comfort for bicyclists and pedestrians, and thereby to increase the use of these modes as a means to access transit. For safety improvements to achieve these goals, the following principles should be applied: pedestrians and bicyclists seek the most direct route possible; bicycle parking options should be secure and convenient; and infrastructure improvements should address on-site, off-site, and approaching roadways through agency and interjurisdictional coordination.

COMMON USERS IN CONFLICT AND TYPICAL CRASH TYPES



GUIDING PRINCIPLES TO REDUCE CONFLICTS

SAFETY

At and around transit stations, conflicts between vulnerable road users, private vehicles, and transit buses should be reduced through the separation of modes.

ACCOMMODATION AND COMFORT

Access to and from the station should serve all users and provide a sense of comfort.

COHERENCE

Access to and from the station should be provided along a clear path of travel for each mode.

PREDICTABILITY

Access routes to the station should have clear right-of-way assignments that create predictable behaviors for all users.

CONTEXT SENSITIVITY

The station and its surroundings should support community health, economic, and livability goals.

EXPERIMENTATION

Transit agencies should consider innovative and creative solutions to address conflicts through coordination.

DESIGN STRATEGIES

In general, conflicts at and around transit stations can be mitigated through well-designed retrofits that prioritize direct and convenient pedestrian and bicycle circulation. Installation of barriers and creation of circuitous pedestrian and bicycle routes to the station entrance should be avoided.

Due to typically high volumes of pedestrians and bicyclists at and around transit stations, consideration should be given to separating modes as they approach the station and at the station itself. Where separation is not feasible, sidewalks should be wide enough to accommodate both bicyclists and pedestrians safely. Sidewalk width should accommodate peak period boarding and alighting volumes on a site-specific basis. Preferred dimensions range from 10- to 30-foot wide. For more information, refer to the [Highway Capacity Manual](#).

CONSIDERATIONS

- Provide street crossing improvements on all legs of intersections near the station. **1**
- Provide context-appropriate midblock crossings, if necessary, to accommodate direct pedestrian and bicycle movements to and from the station entrance. These are particularly important where local or regional bus connections stop on-street and not within the station site itself. **2** For more information, refer to the design topics on [Enhanced Crossing Treatments](#) and [Bus Stops](#).
- Reduce pedestrian crossing distances by installing pedestrian crossing islands or curb extensions. **3**
- Tighten curb radii to reduce vehicle turning speeds or provide slip lanes and crossing islands to accommodate bus turning movements. **4**
- Provide bicycle and pedestrian accommodations and wayfinding across station surface parking lots. Ensure walkways from accessible parking and loading to accessible station entrances are as direct as possible.
- Provide designated crossings at bus loading, pick-up and drop-off areas, and motor vehicle access roads.
- Align grade-separated crossing structures with pedestrian and bicycle desire lines where management of at-grade conflicts is infeasible. **5**
- Enhance pedestrian crossings such as raised crosswalks, mitigation of poor sight distances, and other measures that will slow vehicle speeds. **2**
- Install new sidewalks along well-worn tracks on grass (goat paths) that enter or cross portions of the station site. **6**
- Provide direct bicycle connections to the station via separated bike lanes or shared use paths along desire lines that are not served by streets.
- Ensure that nearby paths and trails are linked to the station and that wayfinding signs are provided. **7**

- Provide bike channels—flat ramps parallel to the stairs on which bicycles can be rolled—on stairways to minimize conflicts with users of pedestrian ramps. Handrail designs must meet current accessibility standards. For more information, refer to the design topic on [Bridge Design](#).
- Separate bicyclists from bus-only access roads and driveways on the station site, where possible, by providing adjacent parallel bicycle routes.
- Minimize dismount zones—locations where bicycle riding is prohibited or discouraged. Their use should be limited to station lobbies, concourses, and areas with consistently high pedestrian volumes.

BICYCLE PARKING

Bicycling serves as a first- and last-mile connection to transit stations. As a result, transit stations should provide ample bicycle parking to accommodate both short- and long-term needs.

CONSIDERATIONS

- Provide a variety of parking options, such as high-quality access-controlled parking areas, on-demand lockers, and enclosed bike racks.
- Locate bicycle parking along or easily visible from the bicycle access routes leading to the station entrance.
- Distribute bicycle parking equipment on the station site to conveniently serve all bicycle access routes. **8**
- Locate rack parking as close as possible to the station entrance, without creating conflicts with pedestrians in heavy pedestrian flow areas. **9**
- Lockers and high-quality access-controlled bicycle parking may be located further from the entrance, but should be adjacent to primary bicyclist access routes. **10**

For more information, refer to the design topics on [Transit Conflicts](#), [Traffic Calming and Design Speed](#), [Network Connectivity](#), [Intersection Geometry](#), and [Separated Bike Lanes](#).

MAINTENANCE

Good surface quality is essential for sidewalks and paths. Maintenance should be conducted routinely to eliminate uneven pavement surfaces and trim vegetation. During winter months, sidewalks and paths should be cleared of snow and ice to maintain access for pedestrians and bicyclists.



INTER-JURISDICTIONAL COORDINATION

Transit stations are typically owned and maintained by transit agencies while the adjacent streets may be owned and maintained by local and State highway agencies. To provide a continuous pedestrian and bicycle network to the station entrances and exits, jurisdictional coordination is necessary. Agencies should conduct joint walking and biking assessments for the stations and surrounding networks to determine potential safety improvements and identify the responsible agencies for all the improvements.

ACCESSIBILITY

All transit stations need to meet all Federal accessibility standards as adopted by U.S. Department of Justice and U.S. Department of Transportation. For more information, refer to the design topic on **Accessibility**. When retrofitting an existing transit station to comply with accessibility requirements, consider broader bicycle and pedestrian access and safety needs. Ensure that pedestrian ramps support other users on wheels such as pedestrians with strollers, push scooters, and bicyclists.

CASE STUDIES

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY ACCESS PLAN WASHINGTON, DC METRO AREA

The Washington Metropolitan Area Transit Authority (WMATA) conducted a system-wide assessment of pedestrian and bicycle access for all 86 Metrorail stations. WMATA evaluated each station site's access, including the provision of bicycle parking, as well connectivity within 0.5 to 1 miles from station entrances. These efforts resulted in more than 3,000 individual projects across 30 types of deficiencies and recommendations. Example recommendations included barrier removal, nonmotorized access through parking lots, dirt-to-concrete path conversion, pedestrian amenities, accessible ramps, lighting, covered bicycle parking, and more.

WMATA prioritized projects into its Pedestrian and Bicycle Element of the 2012–2017 Capital Improvement Program. Projects with immediate public safety implications were addressed first using WMATA staff and on-call contractors.



MASSACHUSETTS BAY TRANSPORTATION AUTHORITY BICYCLE PARKING BOSTON, MA METRO AREA

The Massachusetts Bay Transportation Authority (MBTA) received funding through the American Recovery and Reinvestment Act to plan and design high-quality bicycle parking facilities at priority transit stations. A detailed station inventory analysis was performed to evaluate existing bicycle parking needs for each bus, rapid transit, and commuter rail station within the system. Site-specific design treatments were developed to maintain access and circulation to and from the bicycle parking facility, siting the bicycle parking facility in a safe and visible location, and maximizing the number of bicycle parking spaces at each transit station. Bicycle parking recommendations included Pedal & Park facilities, which are high-quality access-controlled secure bicycle racks, and Bike Port facilities which are covered bicycle racks.



FOR MORE INFORMATION

Association of Pedestrian and Bicycle Professionals. *Bicycle Parking Guidelines*. 2010.

Federal Highway Administration. *Delivering Safe, Comfortable, and Connected Pedestrian and Bicycle Networks: A Review of International Practices*. 2015.

Federal Highway Administration. *Pedestrian Safety Guide for Transit Agencies*. 2008.

Transportation Research Board. *Highway Capacity Manual*. 2010.

Transportation Research Board. *Report 153: Guidelines for Providing Access to Public Transportation Stations*. 2012.

Transportation Research Board. "TCRP Web-Only Document 44: Literature Review for Providing Access to Public Transportation Stations." Submitted March 2009. http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_webdoc_44.pdf.

United States Access Board. *Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way*. 2011.