

# Traditional Signalized Intersections

Traditional intersections are the most common traffic signal-controlled intersection type.

## Design Features

- Direct turning movements improve mobility for motor vehicles, but they increase the number of conflict points at the main intersection for motorists, bicyclists, and pedestrians. Increasing the number of turning movements may also lead to increased traffic signal cycle lengths, complexity, and delay for pedestrians and bicyclists.
- With added turn lanes, traditional intersections can lead to longer crossing distances without refuge for pedestrians and bicyclists.
- Channelized islands that accompany channelized right turns can provide refuge for pedestrians but may also encourage higher motor vehicle turning speeds.
- Install overhead lighting to illuminate bikeway and pathway networks and in advance of all intersection crossings.

## Benefits

- Traditional intersections are familiar to most road users and may facilitate the most direct paths across the intersection for pedestrians and bicyclists.
- Exclusive pedestrian and bicyclist traffic signal phases allow all pedestrian and bicyclist movements to cross the intersection separated in time from motor vehicle movements.



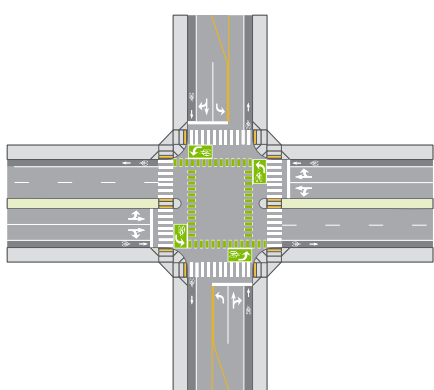
All graphics source: FHWA



## Intersection Types

### BIKE LANE

This design incorporates bike lanes for bicyclists and sidewalks with marked crosswalks for pedestrians.

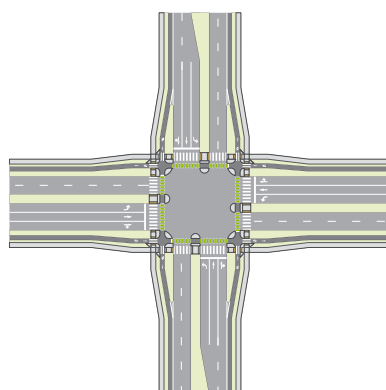


#### CONSIDERATIONS

- The bike lanes feature green colored pavement to emphasize continuity through the intersection, as well as two-stage left turn boxes to allow cyclists to make left turns without merging across lanes of through-moving vehicle traffic.
- Pedestrian refuge islands simplify the pedestrian crossing by reducing the number of lanes crossed in one stage.
- Traffic signal phasing plans will depend on the traffic volumes, sight distance, and context of the intersection.

### SEPARATED BIKE LANE

This design features bike lanes that are separated from motor vehicle traffic vertically and horizontally along the intersection approaches. Pedestrians travel on sidewalks that are separated from the bike lanes and cross through the intersection at marked crosswalks.

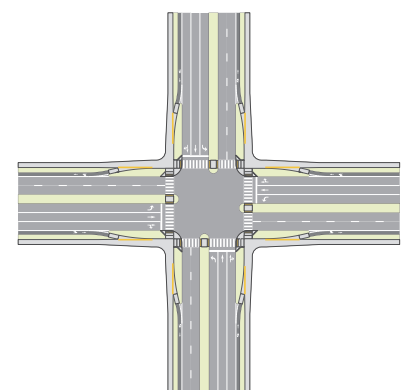


#### CONSIDERATIONS

- It is important to consider the interactions between pedestrians and bicyclists at the corners and at medians where people may wait in groups to cross the intersection.
- The separated bike lane crossings at the corners of the intersection allows cyclists to make left turns without merging across lanes of through-moving vehicle traffic, similar to two-stage left-turn boxes.

### SIDEPATH

Ramps allow cyclists to transition from the on-street bike lane to the sidepath upstream of the intersection and then return to the bike lane downstream of the intersection. Both pedestrians and bicyclists use the marked crosswalks and refuge islands to cross through the intersection.



#### CONSIDERATIONS

- Using a shared facility through the intersection consolidates conflict points between motor vehicles, bicyclists, and pedestrians.
- This design may lead to increased conflicts between pedestrians and bicyclists, especially at the corners of the intersection, and may be more difficult for pedestrians with disabilities to navigate.
- It is important to design the width of shared paths, crosswalks, medians, and queuing areas to accommodate groups of people of all abilities.
- Shared facilities may be appropriate even where only low volumes of bicyclists and pedestrians are expected to use the intersection.

## References

Chandler, B.E., Myers, M.C., Atkinson, J.E., Bryer, T.E., Retting, R., Smithline, J., ... & Izadpanah, P. (2013). *Signalized Intersections Informational Guide, Second Edition* [FHWA-SA-13-027]. Federal Highway Administration, Washington, DC. Retrieved from <https://safety.fhwa.dot.gov/intersection/signal/fhwsa13027.pdf>



For more information refer to *Improving Intersections for Pedestrians and Bicyclists Informational Guide* [FHWA-SA-22-017].