

Quadrant Roadway (QR) Intersections

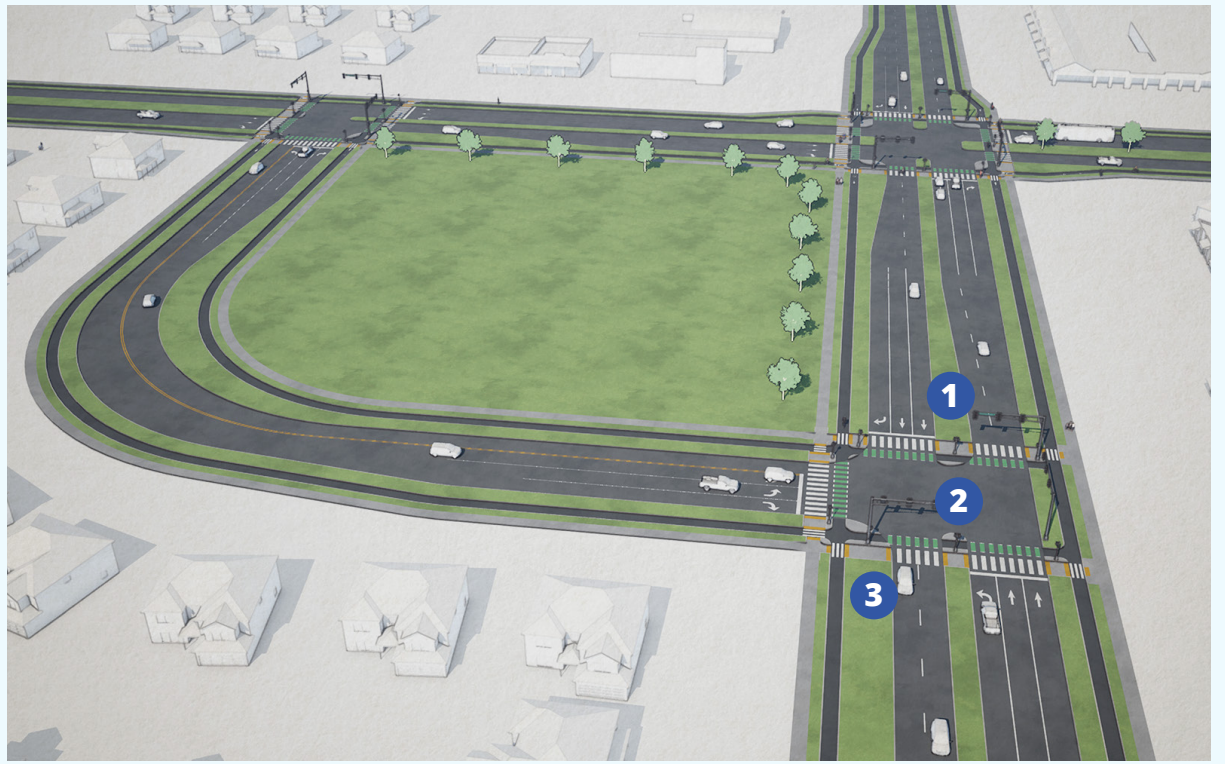
Quadrant Roadway (QR) intersections feature one main intersection and two secondary, or auxiliary, intersections where left turns are displaced to a connector road in one quadrant of the main intersection.

Design Features

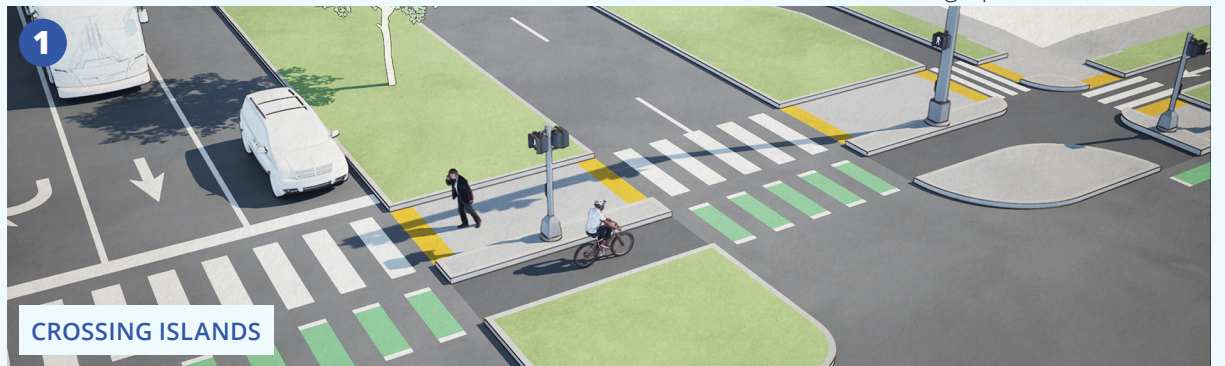
- No left turns are made at the main intersection. Instead, vehicles turning left from any of the four approaches to the intersection use the secondary intersections and quadrant connector road to complete the movement.
- Secondary intersections are normally signalized, though in some cases they may be unsignalized.
- In some cases, the “infield” of the quadrant roadway may be developed. If so, driveways typically provide access from the quadrant roadway to the destinations within.
- Install overhead lighting to illuminate bikeway and pathway networks and in advance of all intersection crossings.

Benefits

- The absence of direct left turns and left-turn lanes at the main intersection decreases pedestrian and bicyclist crossing distances, shortens traffic signal cycle lengths and wait times, and eliminates left-turning conflicts with pedestrians and bicyclists. This is balanced somewhat by the introduction of additional movements at the secondary intersections.
- The main intersection is typically operated as a two-phase traffic signal, minimizing delay for all users.
- Signalized secondary intersections facilitate regular crossing opportunities for pedestrians and bicyclists.



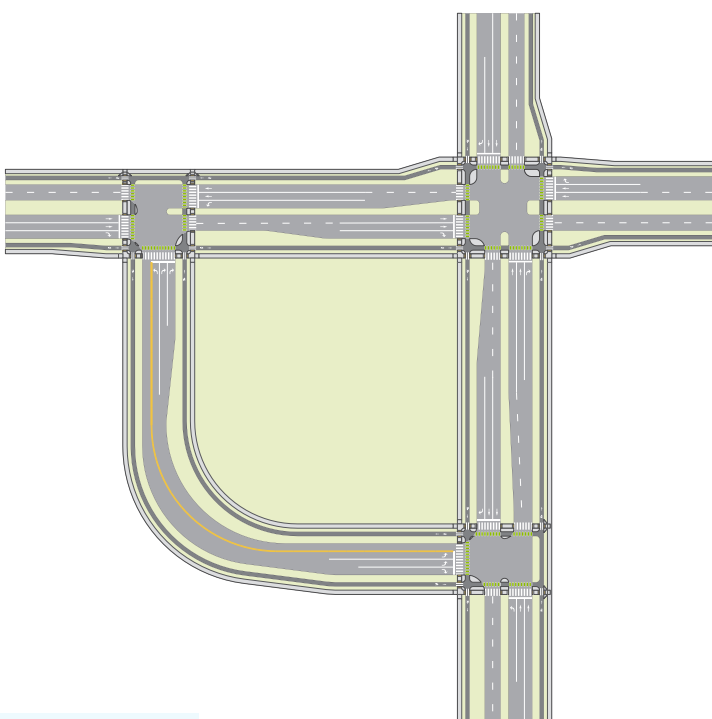
All graphics source: FHWA



Intersection Types

SEPARATED BIKE LANE

This QR design shows separated bike lanes and sidewalks along the major road, minor road, and auxiliary road.

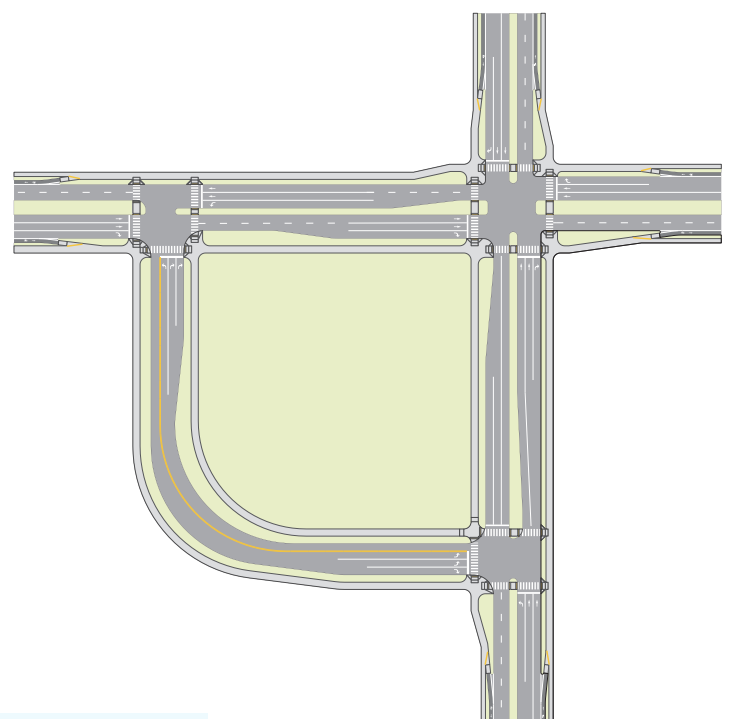


CONSIDERATIONS

- Depending on the surrounding land use context and other factors, speed management may be considered on the quadrant roadway.

SIDEPATH

This design features on-street bike lanes transitioning to sidepaths upstream of the intersections. The sidepaths continue along the auxiliary roadway. Pedestrians and bicyclists travel through the intersections using the marked crosswalks.



CONSIDERATIONS

- 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 under present and future conditions.

References

Reid, J.D. & Hummer, J.E. (2020). *Quadrant Roadway Intersection Informational Guide* [FHWA-SA-19-029]. Federal Highway Administration, Washington, DC. Retrieved from <https://safety.fhwa.dot.gov/intersection/other/fhwasa19029.pdf>.



U.S. Department of Transportation
Federal Highway Administration



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