

Parking on Urban Primary Highways

Design Manual
Chapter 6
Geometric Design

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This section provides guidelines for parking lanes and parking restrictions on urban highways and side streets at intersections. The elimination of parking on primary highways is desirable. Parking along highways can: increase driver tension and accident rates; interfere with the driver's sight triangle; obstruct the driver's view of pedestrians, traffic signals, and traffic signs; increase congestion; and reduce capacity. However, due to economic considerations, physical limitations, and a lack of equivalent parking facilities, complete elimination of parking on primary highways is not possible.

Some of the guidelines in this section are based on Iowa Code; however, these guidelines are not necessarily design policy. Sound engineering judgment, including technical and economic analysis, should be used when applying these guidelines. In addition, the designer is encouraged to make use of turning templates or software to assist with the design of parking lanes near intersections.

Parking on Interstate Highways and Freeways

Parking on interstate highways and freeways is for emergencies only. Parking areas are provided at rest areas and scenic overlooks.

Parallel Parking Lanes on Primary Highways

Parallel parking may be allowed in areas where space is available and there is a lack of equivalent parking facilities. The city will be required to reimburse the Iowa DOT for the entire costs attributable to parking lane construction, including excavation, paving, sidewalk reconstruction, and additional right of way required. The following guidelines should be considered when designing parallel parking lanes:

- On Hot Mix Asphalt (HMA) resurfacing projects, the parking lanes may be resurfaced with the traffic lanes; however, the city will pay for the cost of resurfacing the parking lanes.
- Parking lanes, when provided, should be in block long segments or an equivalent length. Once introduced, parking should be continuous on one side and not shifted from one side of the street to the other.
- The desirable width of parallel parking lanes on new construction is 10 feet (3 meters): 9 feet (2.7 meters) should be considered the minimum.
- When 10 or 11-foot (3.0 or 3.3 meter) traffic lanes are being resurfaced or re-striped as 12-foot (3.6 meter) lanes, existing adjacent parking lanes should maintain a minimum 8-foot (2.4-meter) width, with 10 feet (3.0 meters) being desirable.
- Parking lanes may be constructed sloping downward from the traffic lane between 2% and 6% or sloping upward between 1% and 6%, see Figure 1. A lip curb may be used to adjust the upward slope to the desired range, to prevent water from flowing along the construction joint or to delineate a parking lane from the driving lanes.

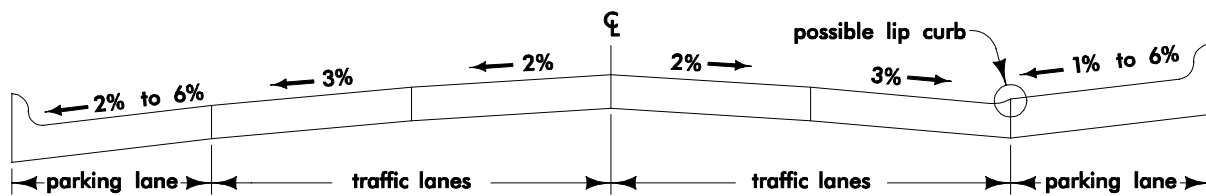


Figure 1: Parallel parking lane cross section.

- Continuity of traffic lanes should be maintained. The number of traffic lanes should not be reduced to add parking.
- The need for added traffic lanes or turning lanes may justify eliminating parking.
- At signalized intersections a capacity analysis is necessary to determine the need for extra lanes. It may be necessary to eliminate parking near intersections to add traffic lanes or turn lanes if right of way is not available.
- Protected parking, see Figure 2, should be used where possible. This will reduce pedestrian crossing distance.

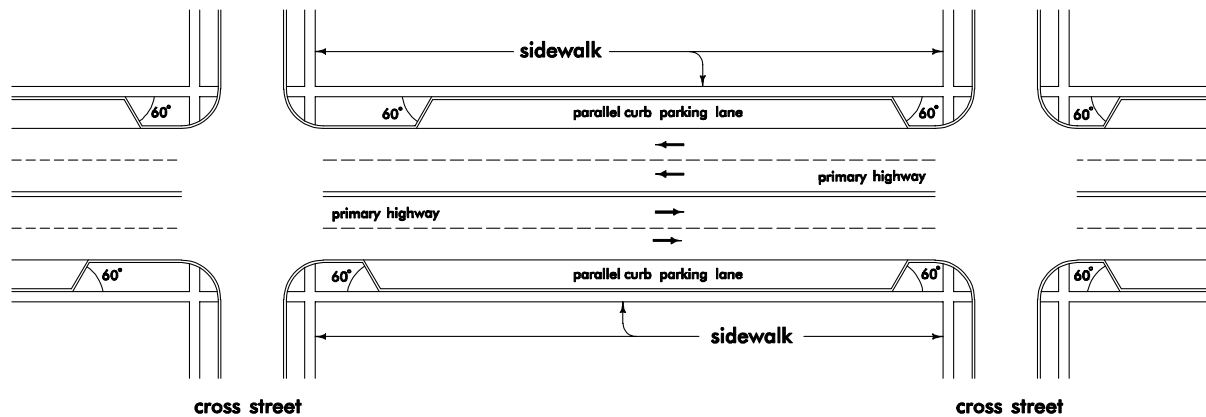


Figure 2: Protected parallel parking lane design.

Diagonal Parking Lanes on Primary Highways

Cities that have parallel parking should not convert to diagonal parking. If diagonal parking already exists, the designer should consult the Office of Traffic and Safety and the Methods Section in the Office of Design to determine if diagonal parking may remain or if one of the following alternatives should be applied:

- In the case of “End of Route” primary extensions, the end segment in the business district containing the diagonal parking may on petition from local officials be considered for removal from the primary road system.
- Reconstruct the pavement to provide a barrier that will separate the diagonal parking area from the adjacent traffic lanes. This option will likely require wide right of way.
- Substitute parallel parking lanes.

Iowa Code Section 321.358 lists a number of parking restrictions which apply to primary highways and minor streets, some of which are included here:

- No parking within 5 feet (1.5 meters) of a fire hydrant.
- No parking on a crosswalk
- No parking within 10 feet (3 meters) upon the approach to any flashing beacon, stop sign, or traffic-control signal located at the side of the roadway.
- No parking within 50 feet (15 meters) of a railroad crossing.
- No parking within 25 feet (7.6 meters) of the driveway entrance to any fire station on the near side of the street. In addition, there shall be no parking on the opposite side of the street within 75 feet (23 meters) of the driveway entrance to the fire station, see Figure 3.

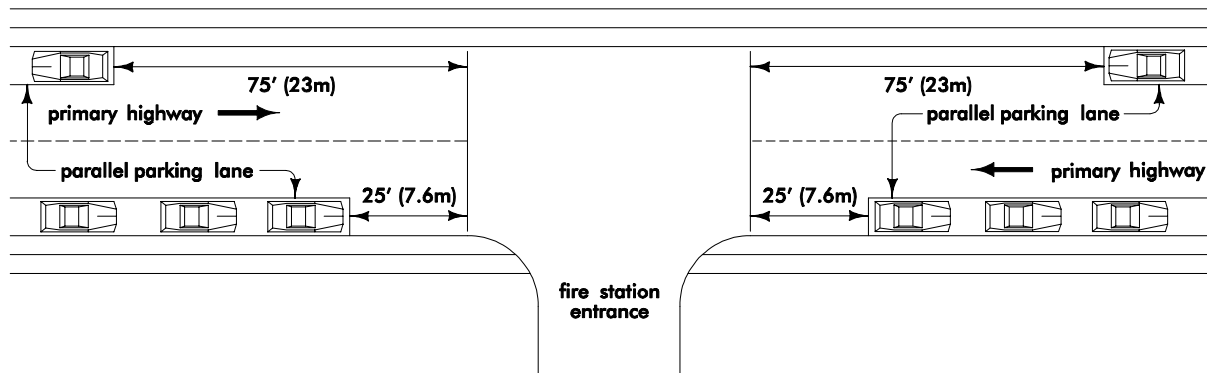


Figure 3: Parking along a street near a fire station driveway entrance.

- No parking in a manner which blocks access to a curb cut or ramp which is located on public or private property.

Additional Parking Restrictions on Primary Highways

Additional parking restrictions on primary highways include:

- At signalized intersections, parking will be prohibited on the primary highway a distance of 10 feet (3 meters) in advance of the near sidewalk or traffic-control signal and a distance of 5 feet (1.5 meters) beyond the far sidewalk, see Figure 4.

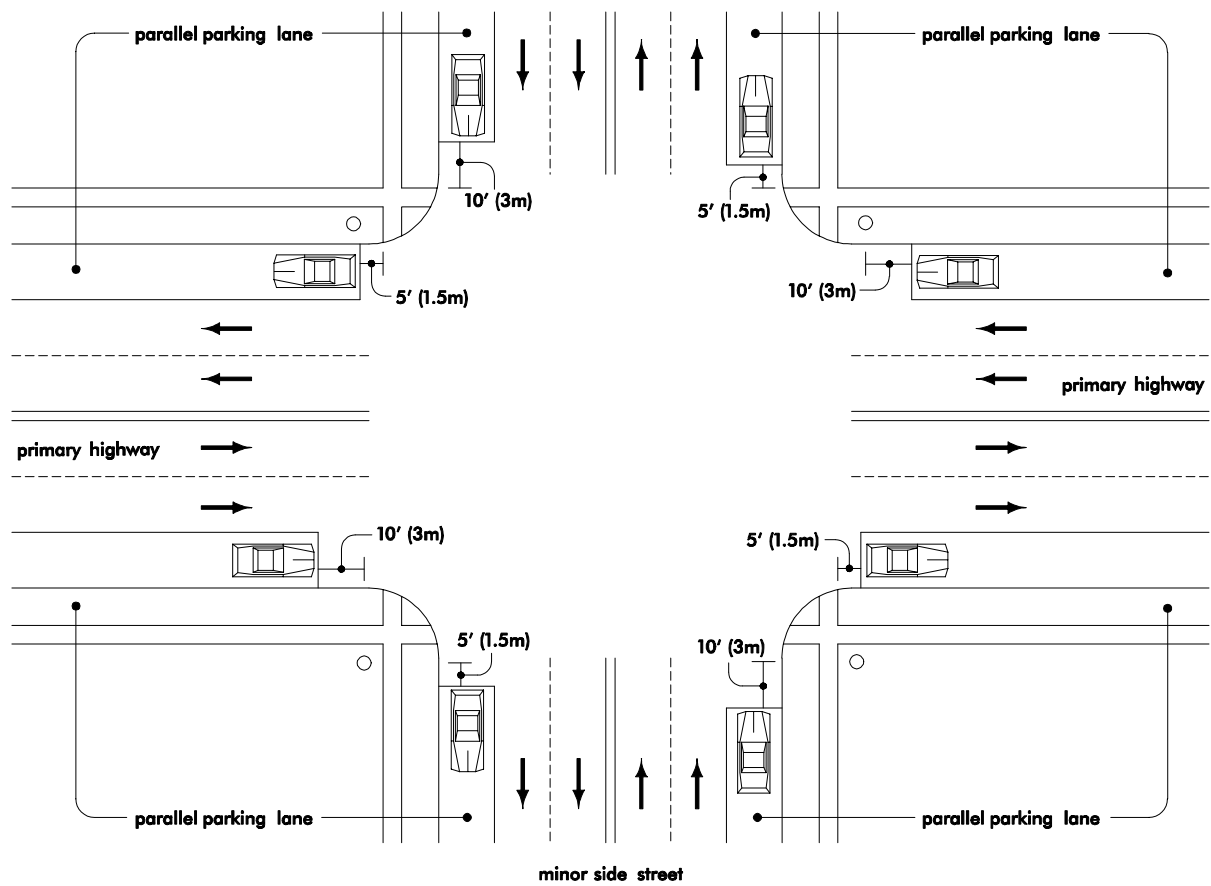


Figure 4: Parking restrictions at signalized intersections.

- At non-signalized intersections, parking will be prohibited on the primary highway a distance of 55 feet (17 meters) in advance of the near sidewalk and a distance of 22 feet (6.7 meters) beyond the far sidewalk, see Figure 5.

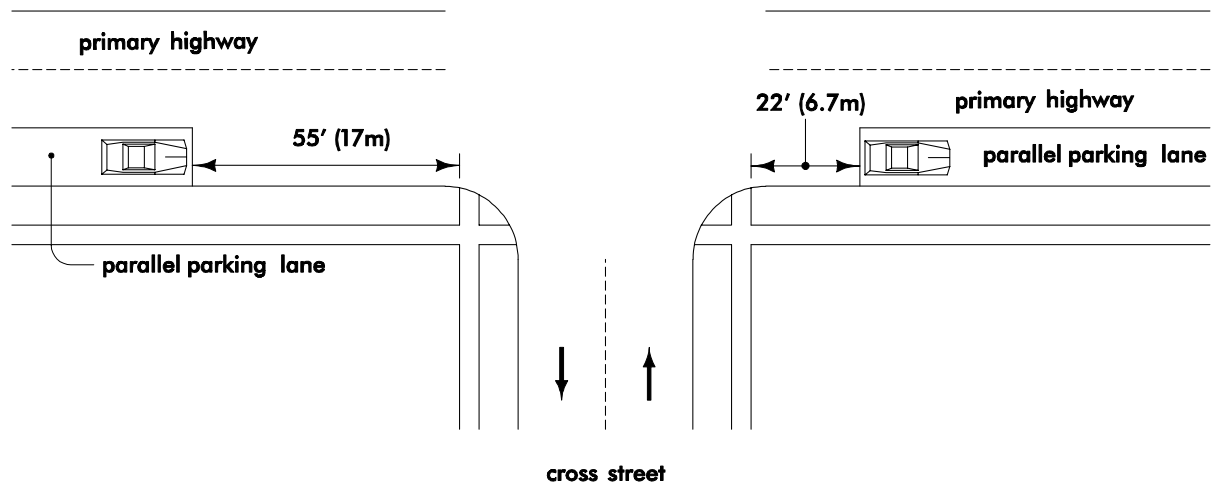


Figure 5: Parking restrictions at non-signalized intersections.

Additional Parking Restrictions on the Side Streets of Primary Highway Intersections

Additional restrictions apply to minor streets.

Minor Side Streets with Stop Signs

On minor side streets with two lanes and two parking lanes (whether parallel or angled), parking will be prohibited a distance of 35 feet (11 meters) in advance of the near sidewalk or stop sign and a distance of 35 feet (11 meters) beyond the far sidewalk, see Figure 6.

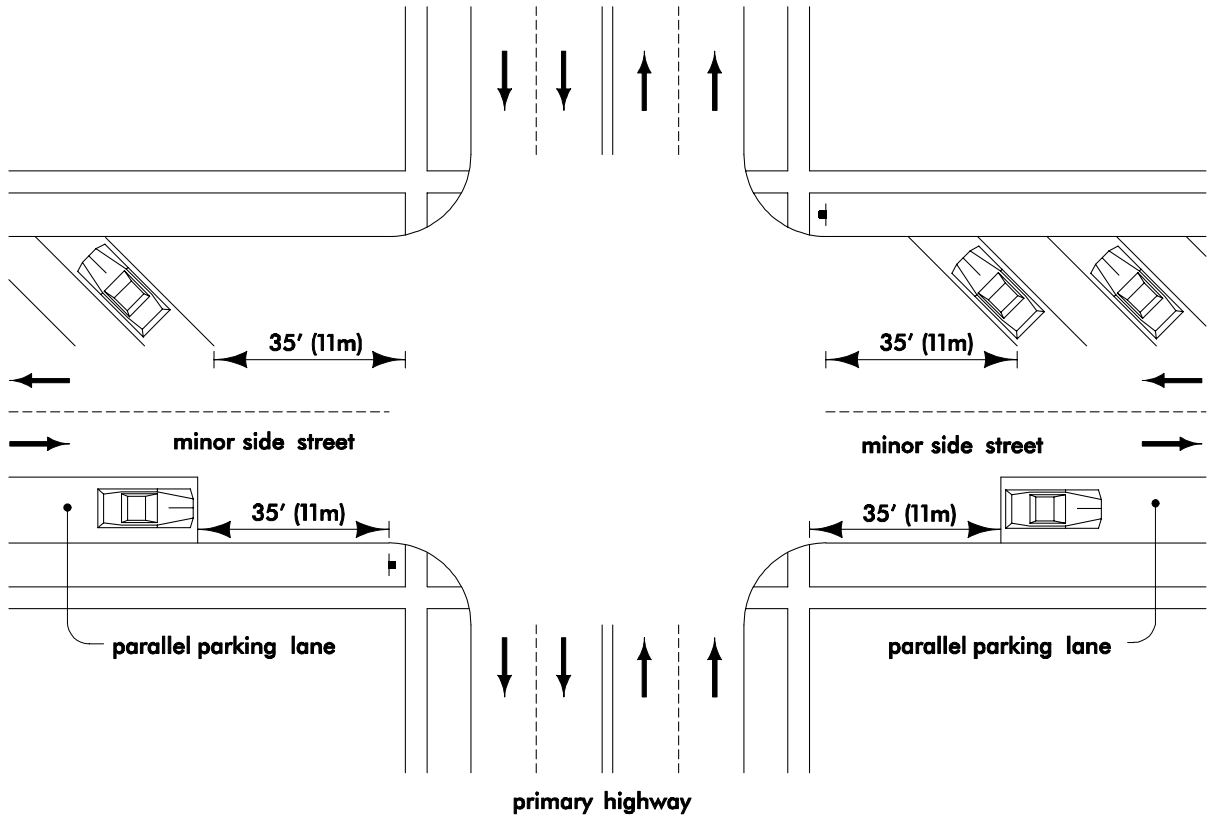


Figure 6: Parking restrictions on two-lane minor side street with stop signs.

On minor side streets with four traffic lanes and two parallel parking lanes, parking will be prohibited a distance of 35 feet (11 meters) in advance of the near sidewalk or stop sign and a distance of 5 feet (1.5 meters) beyond the far sidewalk, see Figure 7.

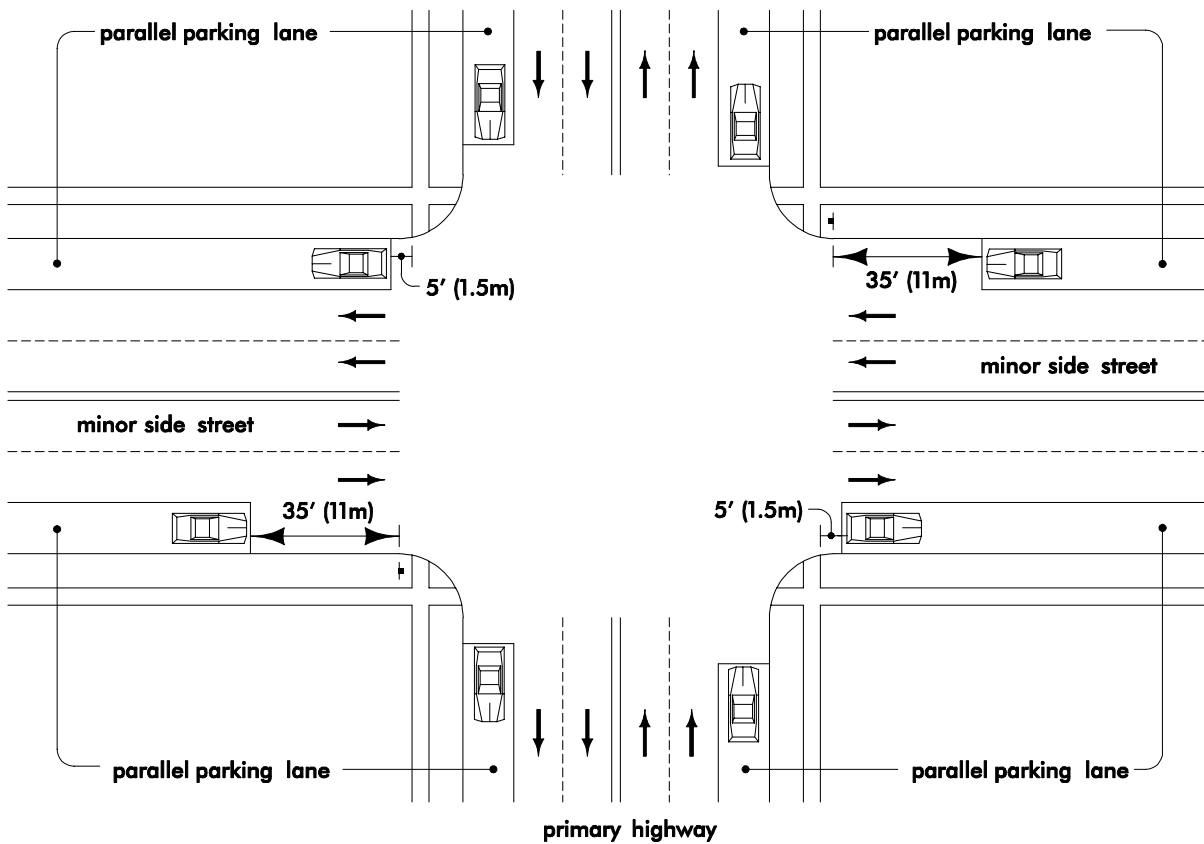


Figure 7: Parking restrictions on four-lane minor side street with stop signs.

Minor Side Streets with Traffic-Control Signals

On minor side streets with two traffic lanes and two parallel parking lanes, parking will be prohibited a distance of 10 feet (3 meters) in advance of the signal or near sidewalk and a distance of 35 feet (11 meters) beyond the far sidewalk, see Figure 8.

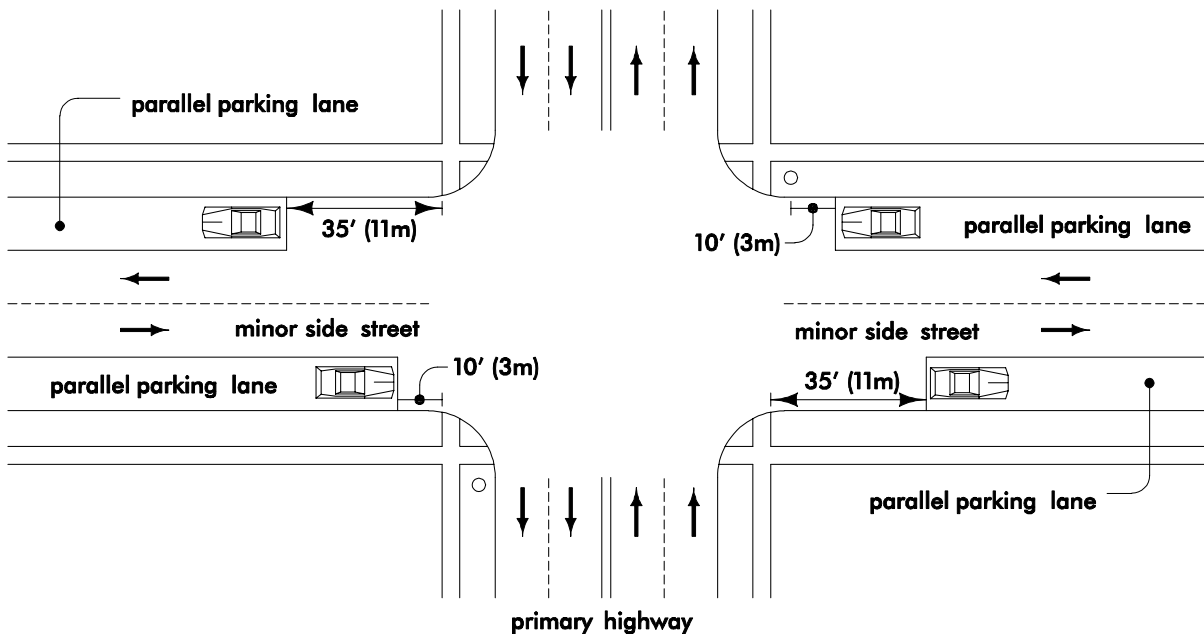


Figure 8: Parking restrictions on two-lane minor side street with traffic-control signals.

On minor side streets with four lanes and two parallel parking lanes, parking will be prohibited a distance of 10 feet (3 meters) in advance of the signal or near sidewalk and a distance of 5 feet (1.5 meters) beyond the far sidewalk, see Figure 4.

Diagonal Parking on Minor Side Streets with Traffic-Control Signals

For the case of an intersection with four traffic lanes, traffic control signals, and diagonal parking on the far side of the intersection, diagonal parking should be prohibited for 18 feet (5.5 meters) beyond the far side sidewalk to allow the parked car to back out without hitting a pedestrian in the far crosswalk, see Figure 9. Refer to Figure 9 for other parking restrictions.

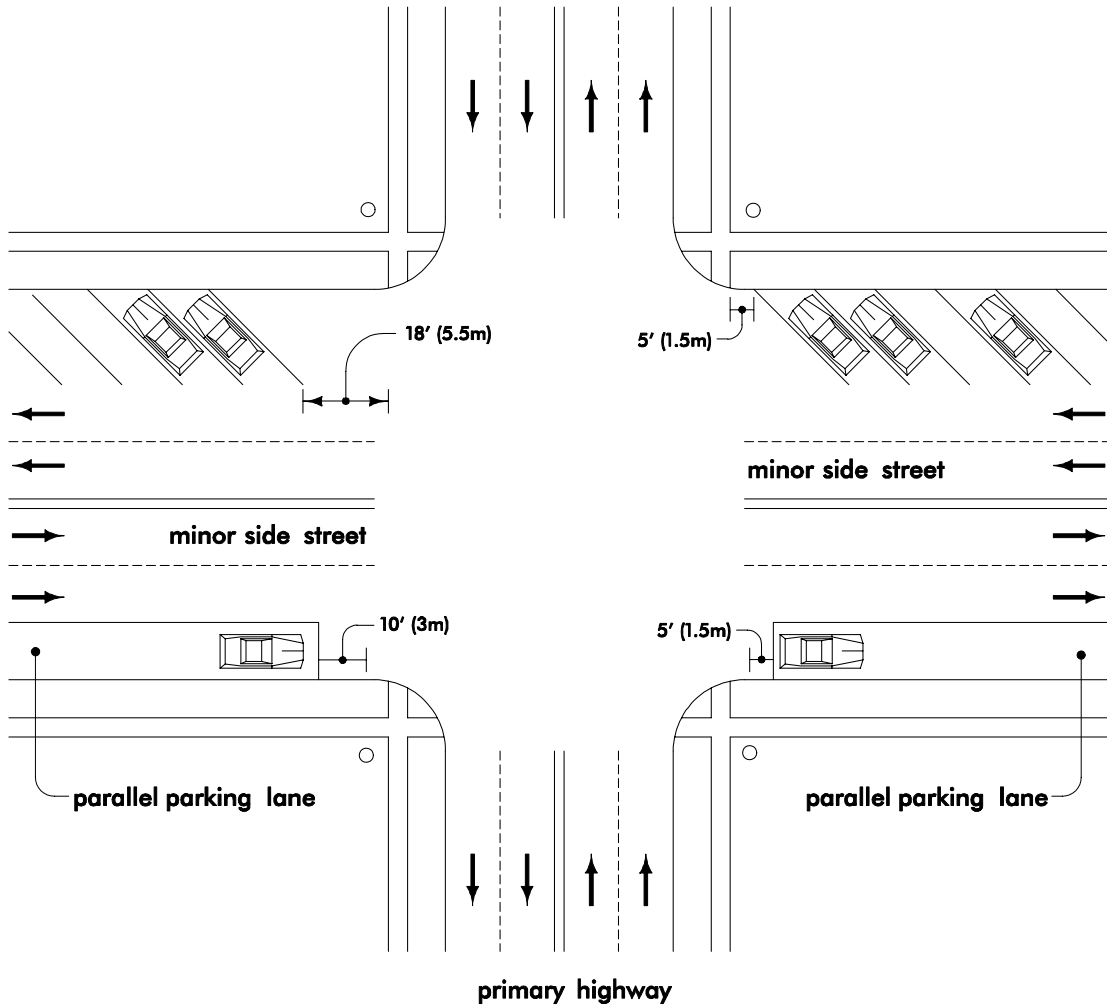


Figure 9: Diagonal parking restrictions on minor side streets with traffic-control signals.

Diagonal Parking on Minor Side Streets with Stop Signs

For the case of an intersection with four traffic lanes, stop signs, and diagonal parking on the far side of the intersection, diagonal parking should be prohibited for 18 feet (5.5 meters) beyond the far side sidewalk to allow the parked car to back out without hitting a pedestrian in the far crosswalk, and diagonal parking should be prohibited for 35 feet (11 meters) in advance of the near sidewalk or stop sign, see Figure 10. Refer to Figure 10 for other parking restrictions.

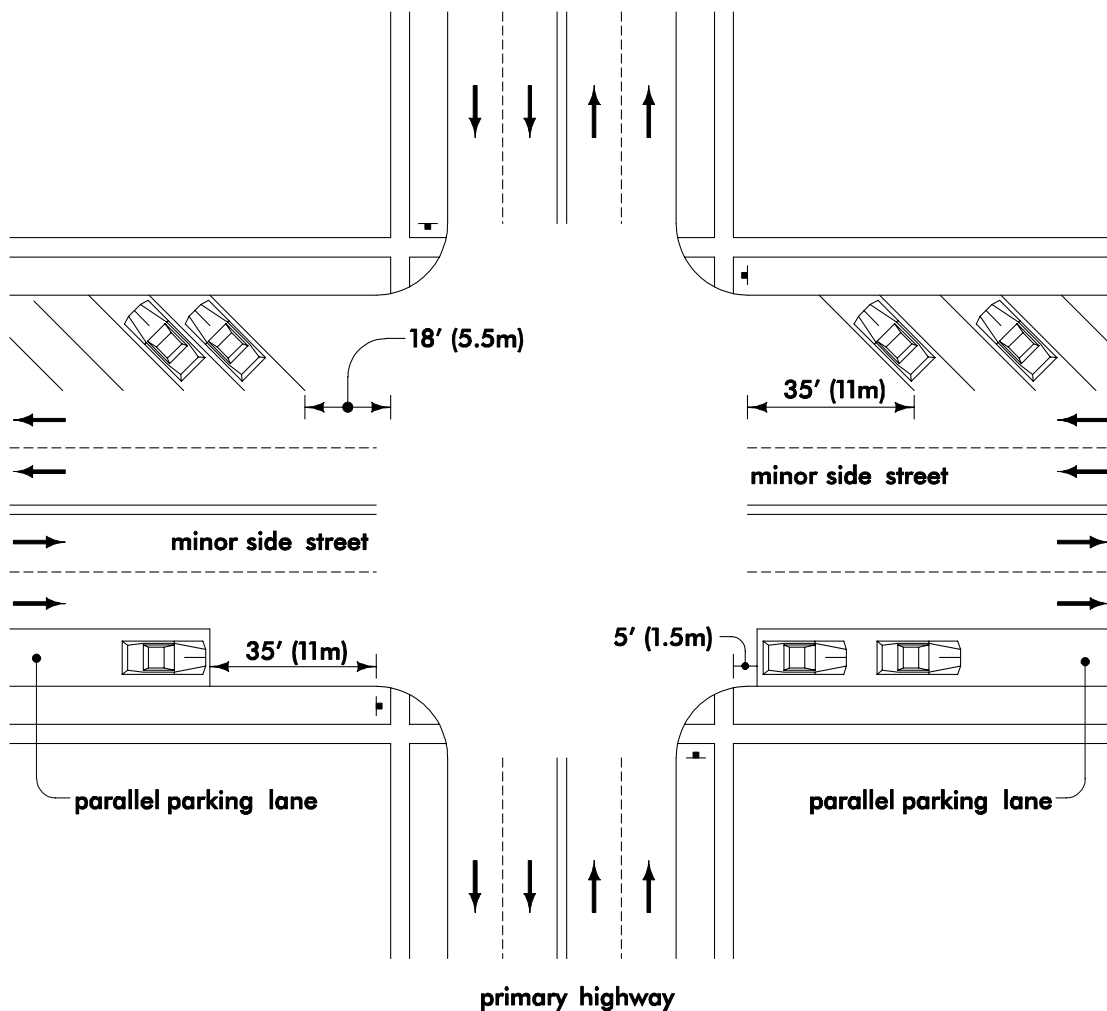


Figure 10: Diagonal parking restrictions on minor side streets with stop signs.

Major Intersections and Special Problems

Intersections involving capacity, special turning movements, and skewed angles will require specific engineering studies to determine parking restrictions. At signalized intersections, capacity analysis is necessary to determine the need for extra lanes. It may be necessary to add turn lanes and eliminate parking near the intersection.

Tandem Parking

One method to avoid long delays due to parallel parking maneuvers is to use a tandem parking system where two cars are parked together and a 16 foot (4.8 meter) gap is provided in front of and in back of the two cars, see Figure 10. When there is only one lane of traffic in each direction on the primary highway, tandem parking should be given strong consideration.

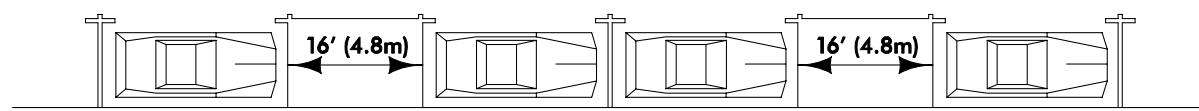


Figure 11: Tandem parking.

As demonstrated in Figures 12a and 12b, cars can pull into parking slots without stopping or backing in the traffic lane. In addition, the amount of time required to complete the maneuver is reduced compared to conventional parallel parking shown in Figure 12c.

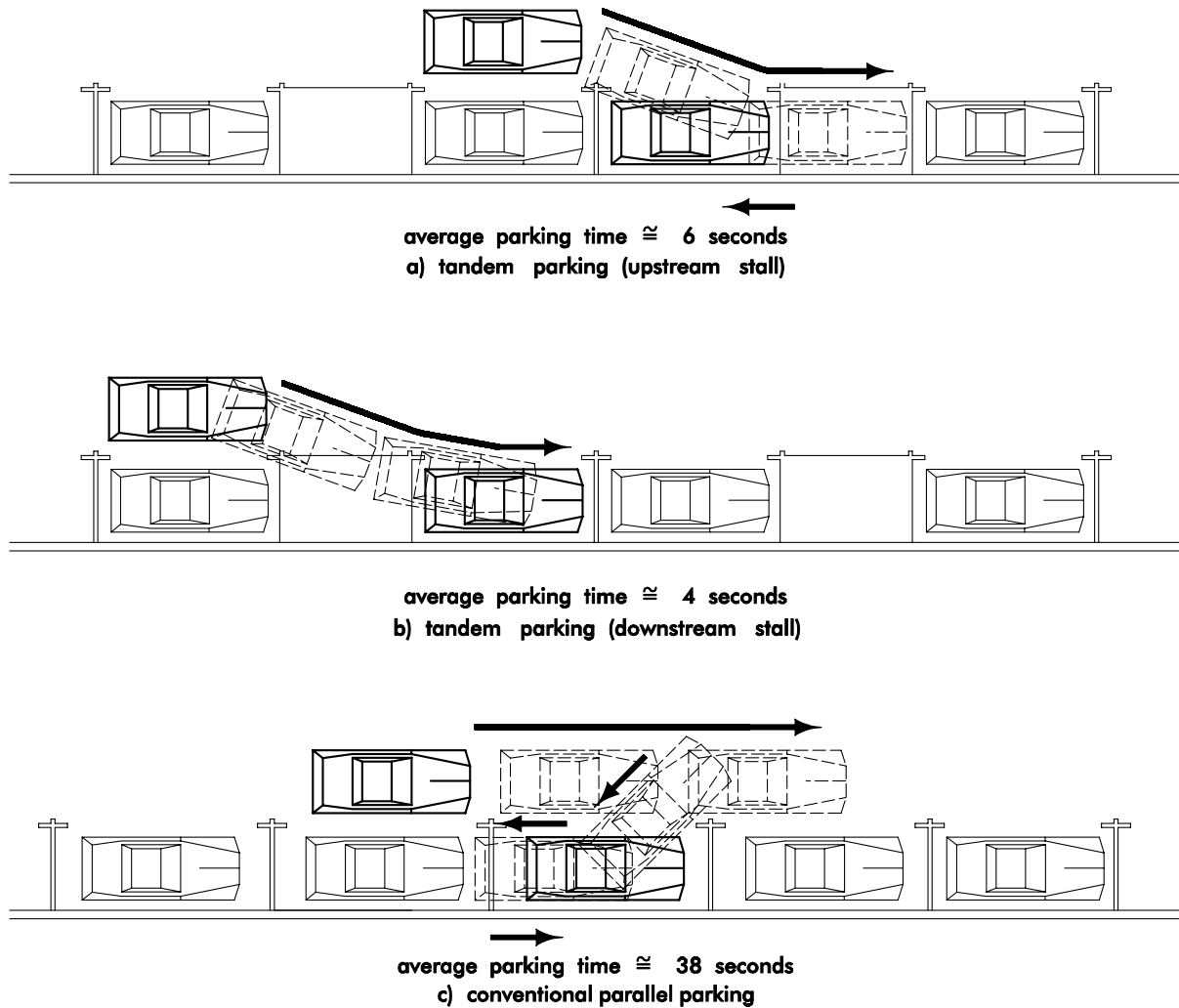


Figure 12: Maneuvers involved with parallel parking.

Other resources exist that discuss parking along urban highways, for example *Parking* by R. Weant and H. Levinson published by the Eno Foundation for Transportation, 1990 or AASHTO's *A Policy on Geometric Design of Highways and Streets*, 2001. The designer is urged to consult these resources. Calculations used for this section are available in "A Guide for Evaluating Parking on Primary Road Extensions," Iowa State Highway Commission, March 1967. If the designer has any questions regarding the values used in this section, he or she should consult this resource or contact the Methods Section in the Office of Design.