

7. Pedestrians. Where pedestrians are required to cross wide intersections, raised-curb center islands of sufficient size and width can provide a refuge area for pedestrians.

46-2.05 Railroad Grade Separations

Grade separations at railroads provide the greatest capacity and safety on an SRA route. However, limited right-of-way and economic considerations in urban areas may restrict the use of grade separations to isolated locations. Protection of sufficient right-of-way is critical where a grade separation is recommended. Design criteria for grade separations are discussed in Chapter 44.

46-2.06 Interchanges

In urban areas, right-of-way and economic feasibility tend to restrict the use of interchanges. However, where the intersection peak-hour level of service in the design year is expected to be E or F, consider providing an interchange. Where interchanges are provided, the single point urban diamond interchange or compressed diamond interchange are recommended to fit into existing right-of-way limitations. Chapter 37 provides further guidance on the selection of interchange types.

Under certain conditions, consider providing a U-turn movement at the cross street as discussed in Section 37-3.04. This design allows the exiting driver access to the opposing frontage road without passing through the signalized intersection on the cross street.

Where an interchange is proposed at the intersection of two SRA routes, give priority for the grade-separated structure to the route with the higher traffic volume.

Evaluate upgrading existing incomplete interchanges to provide for all movements (e.g., half diamonds, partial cloverleaves). Traffic conditions and directional flows that existed at the time of initial construction may have significantly changed. In addition to providing all movements, evaluate widening existing structures, lengthening storage bays for left-turning vehicles, adding right-turn lanes, and interconnecting traffic signals to improve traffic progression along the SRA route.

46-2.07 Drainage

Drainage problems are intensified in urban areas where high runoff coefficients are often combined with storm drainage systems of inadequate capacity. The *IDOT Drainage Manual* provides guidance for the design and construction of all drainage improvements. Chapter 48 illustrates a more efficient means to reduce the flow of water from the high side to the low side of a superelevated urban horizontal curve.

Summary of Comments on Chapter_46_080624.pdf

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See Chapter 17.

- c. No Peak-Hour On-Street Parking or Loading. For implementation of a curb HOV lane, it must be feasible to prohibit parking and loading and unloading in the curb lane; see Section 46-2.08.
- d. More than the Minimum Number of Travel Lanes. In urban areas, three through lanes should exist in each direction where one lane can be assigned for HOV use. This provides for the minimum of two through lanes to be maintained unless the situation warrants changing the street into a one-way arterial pair.

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challenge the designer to accommodate the needs of all users of the corridor.

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46-2.12 Pedestrians and Bicyclists

Safe movement and accessibility are key issues for bicyclists and pedestrians. Urban SRA corridors are likely to experience bicyclists and a high volume of pedestrians, which may ~~significantly impact the capacity and operations of the SRA route.~~ One advantage of urban routes is that there typically are close parallel routes that may be considered for bicycle ~~and pedestrian routes.~~ ~~Identify these parallel facilities as bicycle routes so that the SRA routes can be reserved for vehicular traffic.~~ At major obstacles (e.g., river crossings, canals, railroad bridges, limited access facilities), ensure that adequate provisions are available so that pedestrians and bicyclists have access across these barriers. Chapter 17 provides additional information for bicycle and pedestrian facilities. Chapter 58 provides information on disabled accessibility requirements.

46-2.13 Environmental Considerations

The environmental analysis component of the SRA planning process is primarily an inventory of existing conditions. The inventory identifies those environmental resources in the corridor and probable impacts based on roadway improvements. Environmental assessments will be performed during the Phase I design work. These are discussed in Part III of this *Manual*.

46-2.14 Right-of-Way

Where there is restricted right-of-way, it is generally not feasible to provide the desirable urban SRA cross section as shown in Figure 46-2B. In restrictive right-of-way locations, the designer should consider implementing one or more of the following options:

- providing a minimum of two through lanes in each direction,
- only allowing left turns from the SRA route at major intersections,
- consolidating and restricting intermediate access points,
- restricting on-street parking,
- restricting on-street loading and unloading zones,
- developing a one-way arterial pair, and/or
- considering alternative right-of-way acquisitions.

- (1) Design Speed. The 30-mph (50-km/h) design speed should only be used in central business districts.
- (2) Traveled Way Width. If right-of-way is restricted, 11 ft (3.3 m) travel lanes may be used (i.e., 2 @ 22 ft (6.6 m)).
- (3) Flush Median Width. Use 14 ft (4.0 m) if there is a significant number of trucks making left turns. If a 11 ft (3.3 m) wide flush median cannot be provided due to restricted right-of-way, consider the use of a one-way arterial pair.
- (4) Parking Lane Width. If the parking lane will be used as a travel lane or bus/HOV lane during peak hours or may be converted to a travel lane in the future, provide a 12 ft (3.6 m) width. The width of the parking lane includes the gutter width.
- (5) Travel Lane Cross Slope. For parking/bus/HOV lanes, the cross slope is 5/16"ft (2.5%).
- (6) Clear Zone. For curbed facilities, the minimum horizontal clearance to any obstruction is 1.5 ft (500 mm) measured from the face of curb.
- (7) New and Reconstructed Bridge Widths. Clear roadway bridge widths are measured from face to face of outside curbs or parapets walls. Urban bridge widths are normally defined as the sum of the approach traveled way widths, the width of the median, and the width of gutters. A sidewalk or bikeway will result in additional bridge width. For sidewalks proposed on bridge, add 10 ft (3.0 m) to each side of bridge.
- (8) Existing Bridge Widths to Remain in Place. Clear roadway bridge widths are measured from face to face of outside curbs or parapet walls. Implies elements allowed to remain in place without a design exception approval when cost effective and when safety record is satisfactory. ~~Provide at least one sidewalk across the bridge.~~
- (9) Vertical Clearance (SRA Under).
 - a. The clearance must be available over the traveled way and median where a flush median is used.
 - b. Table value includes allowance for future overlays.
 - c. The 14 ft 0 in (4.3 m) clearance may be allowed to remain in place with consideration for reconstructing to a clearance of 14 ft 9 in (4.5 m).

**GEOMETRIC DESIGN CRITERIA FOR URBAN STRATEGIC REGIONAL ARTERIALS (SRA)
(New Construction/Reconstruction)**

Footnotes to Figure 46-2E

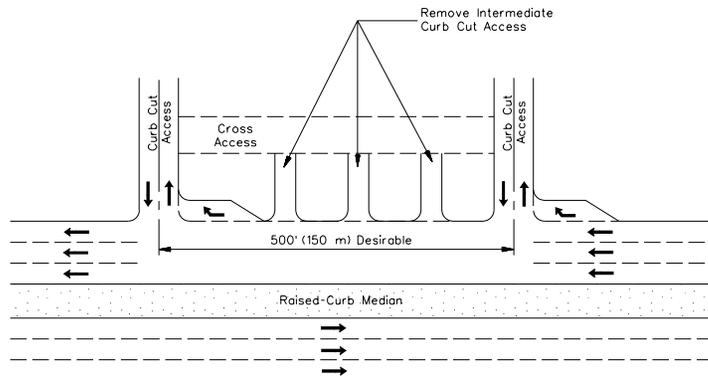
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STRATEGIC REGIONAL ARTERIALS

December 2002

46-2(17)

- b. Directional Movements. Where curb-cut access is allowed along a suburban SRA route, it is preferable that only right-in and right-out turns be permitted. This will prevent left-turn movements onto the SRA across through traffic lanes. An example of this design is shown in Figure 46-2C.
 - c. Consolidating Access Points. In suburban areas where numerous curb-cut access points are present, it is recommended that the access be consolidated into single points at a desirable spacing of 500 ft (150 m) between access points. This is illustrated in Figure 46-3D. The properties should be interconnected through the use of cross-access easements.
 - d. Left-Turn Restrictions. Discourage left-turn movements from the SRA into curb-cut access points. However, where this prohibition may not be feasible, increase the length of the turn-lane storage to accommodate left-turn queues during peak hours.
3. Develop Internal Access. Where new development or redevelopment occurs adjacent to a suburban SRA, it is desirable to provide internal circulation roads within the development. Design the circulation roads to accommodate not only automobiles, but delivery trucks, transit, and bicycles. Also, provide sidewalks within the development. If a signal and median crossover are warranted at the new access point, the spacing should not be less than ¼ mile (400 m) to an adjacent signal.



CONSOLIDATED ACCESS (Suburban SRA)

Figure 46-3D

Access management principles should be coordinated among communities along each suburban SRA route. Chapter 35 provides further guidance on access management techniques that are also applicable to suburban SRA routes.

46-3.04 Intersections

In addition to Chapter 36, the following is applicable to intersections on suburban SRA routes:

1. **Turn Lanes.** Section 36-3 provides the warrants and design criteria for turn lanes. Where developing turn lanes, it is important to maintain at least two through lanes in each direction. In addition, the following will apply:
 - a. **Left-Turn Lanes.** Provide left-turn lanes at all intersections. It is recommended that the turn lanes be offset to provide increased sight distance to opposing traffic. See Section 36-3.03 for the design of offset left-turn lanes.
 - b. **Right-Turn Lanes.** Provide right-turn lanes where warranted.
 - c. **Dual Left-Turn Lanes.** Where there are high left-turn volumes, consider providing dual left-turn lanes to alleviate congestion where the single left-turn lane storage length is inadequate (e.g., 350 ft (100 m)). Phasing for the dual left-turn lanes must operate under the "protected only" phasing. If practical, separate the dual left-turn lanes from opposing through lanes by a raised-curb median; see Chapter 36. Within a suburban environment where development is eminent, provide a 30 ft (9.5 m) wide median to allow for future flexibility at major entrances with dual left-turn lanes.
2. **Turning Radii.** ~~insufficient~~ turning radii for trucks can ~~significantly~~ affect capacity at an intersection. Small radii may require large trucks to slow down to maneuver through the turn, to encroach into opposing lanes, or encroach onto the curb. ~~Design the curb radii to meet the expected design vehicle, typically a WB-50 (WB-15).~~ Review turning radii ~~improvements~~ for their impacts on pedestrians and adjacent development. Design vehicles are discussed in Section 36-1.08.
3. **Approaches.** Intersections on suburban routes with more than four approaches can cause operational problems. To alleviate this problem, consider one of the following options:
 - close one of the approaches,
 - convert one of the approaches to one-way operation going away from the intersection,

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T	Author: Lkirchler	Subject: Inserted Text	Date: 6/24/2008 11:27:15 AM Consider the needs and use of the specific intersection per 17-4.04.3.1 curb radii. If significant pedestrian use is expected, the designer should balance the safety needs of pedestrians with truck operations. This may include allowing the use of adjacent lanes and curb encroachments.

46-3.11 Transit**46-3.11(a) Improvements**

Techniques associated with mass transit that may be applicable in certain suburban situations are described in Section 46-2.11. For suburban areas, it will also be necessary to improve transit station accessibility using one or more of the following techniques:

1. Actuated Traffic Signals. Transit station usage is extremely intensive during peak periods. Incorporating traffic signals on the SRA or connecting streets with phasing and timings that are responsive to the varying levels of traffic during the day will make transit stations more accessible and reduce delays. If new traffic signals are proposed at transit stations, they should meet the established traffic volume warrants and criteria for spacing of signals.
2. Turn Lanes. To maximize through traffic movements for vehicles not wishing to access transit stations, provide channelized right- and left-turn lanes for vehicles turning into transit stations. If demand is sufficient, provide dual left- and/or right-turn lanes. Appropriate storage bay lengths for turning vehicles must also be implemented.
3. Park and Ride Lots. Investigate providing parking for commuters. If a potential parking lot site is judged too far from the transit station, then parking in this area could be free or at a greatly reduced rate to encourage use. Another option is to provide satellite lots with free shuttle buses to the stations. Preferential parking stalls nearest to transit stations could be designated for High Occupancy Vehicles. Also, provide secure bicycle parking at transit stations. Include left- and right-turn lanes at the entrance to the facility to enhance safety.
4. Transit Access. If substantial parking for a transit station is located on the opposite side of a SRA route, consider providing appropriate access for pedestrians.

46-3.11(b) Express Bus Service

Bus service on suburban SRA routes should be limited to express buses that are equipped with priority signal preemption capability that can be deployed when they are running behind schedule. However, coordinate the bus preemption with existing vehicular progression along the SRA route.

Design stops as bus turnouts; see Chapter 58. Walkways to stops of intersecting services will facilitate transfers and promote safety. Near-side and far-side bus stop configurations should be planned to minimize distances between connecting lines.

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Ensure that appropriate sidewalks are provided from parking areas and from adjacent neighborhoods.

46-3.12 HOV Lanes

High occupancy vehicle (HOV) lanes designated for buses, carpools, and vans may be appropriate in selected areas with high levels of transit ridership and ridesharing activity. Note that there should also be adequate capacity to accommodate traffic in the general use lanes.

46-3.13 Pedestrians and Bicyclists

On suburban SRA routes, more options are available for accommodating pedestrian and bicycle access than in urban areas. For example, although right-of-way availability is still a critical issue, dense development immediately adjacent to the roadway is not as common an occurrence as in urban areas. Provisions for bicyclists and pedestrians may be accommodated within the SRA right-of-way itself. In suburban situations, alternative parallel routes may not always be available.

Access across major obstacles (e.g., river crossings, railroads, limited access facilities) or barriers will be accommodated by the SRA if alternative access is not feasible. The choice of how to provide access within the SRA corridor is determined on a case-by-case basis. Under all situations, the goal is to provide a continuous system of bicycle and pedestrian routes. Chapter 17 provides guidance on the design of bicycle and pedestrian facilities. Chapter 58 provides information on disabled accessibility requirements.

46-3.14 Environmental Considerations

The environmental analysis component of the SRA planning process is primarily an inventory of existing conditions. The inventory identifies those environmental resources in the corridor and probable impacts based on roadway improvements. Environmental assessments will be performed during Phase I design work. These are discussed in Part III, Environmental Procedures, of this *Manual*.

46-3.15 Right-of-Way Acquisition and Corridor Protection

A major goal of the SRA planning process is to identify and protect future right-of-ways that are needed to construct the recommended roadway design configuration. Suburban right-of-ways may adjoin both developed and undeveloped properties. During Phase I studies, local governments should be contacted and encouraged to work with roadway jurisdictional agencies. This will ensure that adequate right-of-way is provided for suburban SRA routes in the approval process for new developments. Local governments should review their building setback requirements to ensure that all new building construction is outside the recommended SRA right-of-way widths. This will protect the right-of-way for future roadway expansion.

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