CHAPTER 8
SUBURBAN SRA ROUTES

8.1 TRANSIT

Techniques associated with mass transit which may be applicable in certain suburban situations are described below. All measures are supportive of bus and/or rail service and are considered with the objectives of the SRA system.

8.1.1 Light Rail Systems and Busways

On selected arterials, where development densities would support them, construction of light rail lines and busways may be considered. In selected suburban corridors which have been identified in the 2010 Transportation System Plan, implementation of light rail lines and busways may be appropriate later in the twenty-year planning period. Reserving rights-of-way would allow preservation of the option of these light rail system and busway projects.

8.1.2 Circulator and Shuttle Services

These services provide connections between office buildings, retail centers, social services, residential developments and other major generators, and may be operated by either the public or the private sector. Within the suburban environment, the typical application would be to have buses serve an area with several large activity centers, such as office complexes or shopping malls. Shuttles may also connect transit facilities to employment and other activity centers.

8.1.3 Ridesharing

Carpools and vanpools are the most common forms of ridesharing. Carpools are frequently privately organized, but employers sometimes sponsor vanpools. In Northeastern Illinois, CATS and the Regional Transportation Authority assist with the organization and start-up costs of vanpool CATS also provides assistance in identifying carpool participants, on request. Marketing and financial support for van and carpooling programs are strategies which complement the SRA program in general, and in selected major activity areas, such as major employment areas, can have a significant effect on traffic congestion.

8.1.4 High Occupancy Vehicle (HOV) Lanes

Where criteria/conditions given in section 5.4 can be met on suburban SRA routes, provision of HOV lanes should be considered in the specific route configuration. Examples of the application of HOV lanes are shown in *Figure 7.1* and *Figure 7.2* in Chapter 7.

8.1.5 Passenger Facilities

See Section 7.1.6 in Chapter 7

8.1.6 Signal and Intersection Improvements

See Section 7.1.7 in Chapter 7

8.1.7 Improved Transit Station Accessibility

Existing transit stations along suburban SRA routes should be evaluated for potential improvements to increase accessibility from the SRA. Increased accessibility may motivate more people to make regional trips utilizing transit thereby reducing the number of vehicles on the SRA. Accessibility could be improved by one or more of the following techniques.

- **Actuated Traffic Signals** - Transit station usage is extremely intensive during peak periods. Incorporating traffic signals 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 warrants and spacing of signals criteria.

- **Turn Lanes** - To maximize through traffic movements for vehicles not wishing to access transit stations, channelized right and left turn lanes could be constructed for vehicles turning into transit stations. If demand is high enough, dual left and/or right turn lanes could be constructed. Appropriate storage bays for turning vehicles must also be implemented.

- **Parking Improvements** - Parking lot expansion for commuters should be investigated. If a potential expanded 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. Also, preferential parking stalls nearest to transit stations could be designated for High Occupancy Vehicle. Secure bicycle parking should be provided at most suburban transit stations.

- **Pedestrian Grade Separations** - If substantial parking for a transit station is located on the opposite side of an SRA, grade separation for the pedestrian movement could be considered. This would tend to reduce delays on the SRA caused by at-grade pedestrian flow, and would also improve safety and convenience for the pedestrians.

8.1.8 Transit Signage

See Section 7.1.9 in Chapter 7

8.2 ROADWAY OPERATIONS

8.2.1 Intersections

On suburban routes, intersections with more than four approaches often cause many operational problems. Excess approaches can be removed by closing the approach, by conversion to one-way traffic movement away from the intersection, or using extremely short signal timings to reduce the desirability of the approach. It is recommended that intersections with more than four approaches be reconfigured to remove the excess approaches away from the intersection.

In suburban locations, where the recommended cross-section of dual left turns, three through lanes and separate right turn lane is developed at major intersections, channelization and islands could be used to direct the flow of vehicles. Channelization and islands would be most effective at wide intersections where excess pavement exists leaving much to the discretion of the driver. When properly designed, channelization can increase intersection capacity and reduce conflicts.

Channelization can also be effective at intersections where approaches are not at 90 degree angles. At these locations channelization and islands can guide motorists through the usual turning movements which are often required.

An example of using channelizing islands on a suburban SRA is shown in *Figure 8.1*.

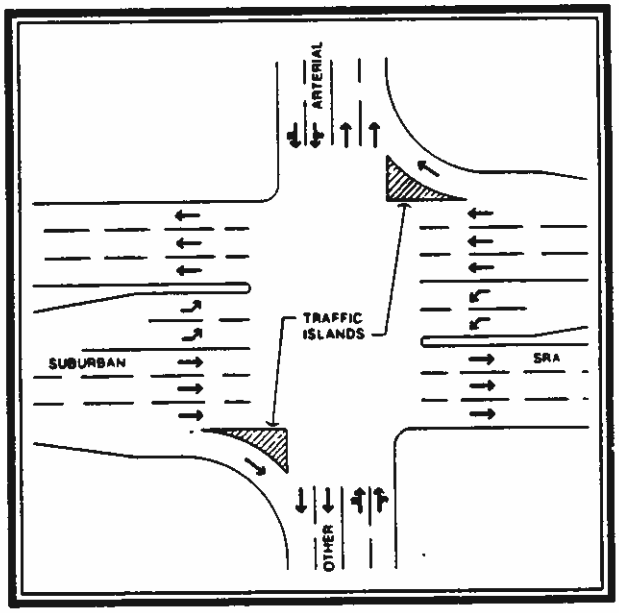

Figure 8.1 Channelization Islands

8.2.2 Intersection Lighting

All suburban SRA to SRA route intersections should have appropriate intersection lighting.

8.2.3 Overhead Signing

All suburban SRA to SRA route intersections should have advance overhead signing with route numbers and/or road names and, where appropriate, regional destinations indicated.

8.2.4 Driver Information Systems

Driver information systems could also be applied to suburban SRA routes; typical systems are described in Section 7.2.2 in Chapter 7. Ideally, one system should be developed to cover all the SRA routes and operate in cooperation with any existing or future Freeway Information Systems.

8.2.5 Advanced Signal Interconnect Methods

The same advanced signal interconnect methods described in Section 7.2.3 in Chapter 7 could also be applied to the suburban SRA routes.

8.2.6 Left Turn Lagging Signal Phasing

Left turn lagging operation as described in Section 7.2.4 in Chapter 7 could also be applied to signal systems on suburban SRA routes. The same effect of increasing progression bandwidths could be experienced. This type of phasing should only be allowed at T-intersections: the left turn lag should not be used in conjunction with a left turn yield on green for opposing traffic flows.

8.2.7 U-Turns and U-Turn Crossovers

U-turns performed from left turn lanes at signalized intersections can provide access to both sides of the roadway while limiting crossing maneuvers at midblock locations. This can be accomplished by construction of a raised median curb. Intersection timing must be adjusted to allow for the extra left turn signal time.

An alternate strategy is to not allow left turns to be performed at the intersection, but allow a U-turn past the intersection to get to the cross-street. This concept, called a U-turn crossover, has been used on Telegraph Road in Detroit, Michigan. The benefits are increased capacity and simplified intersection phasing. Telegraph Road has been shown to handle in excess of 100,000 vehicles per day on an eight-lane cross-section. An example of this concept is shown in *Figure 8.2*. This concept must be used continuously for a minimum five mile segment and requires a 46 to 60 foot median to assist the U-turning vehicles.

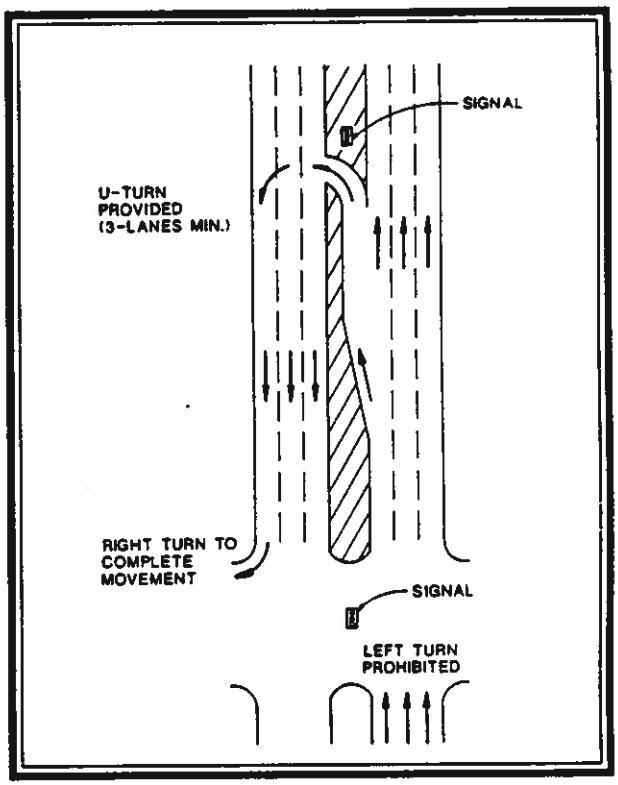

Figure 8.2 Telegraph Road in Detroit, Michigan

8.2.8 Two-Way Left Turn Lanes

In areas where there are numerous access points along a roadway, such as commercial areas, continuous two-way left turn lanes have been shown to increase capacity and reduce conflicts. Two-way left turn lanes should only be used where the speed limit is less than 45 mph and only where there are two through lanes or less in either direction. This type of design could be used in suburban areas where there are numerous access points and where other solutions to control access (frontage roads, access closures, etc.) are not feasible. An example of a two-way left turn lane is show in *Figure 8.3*.

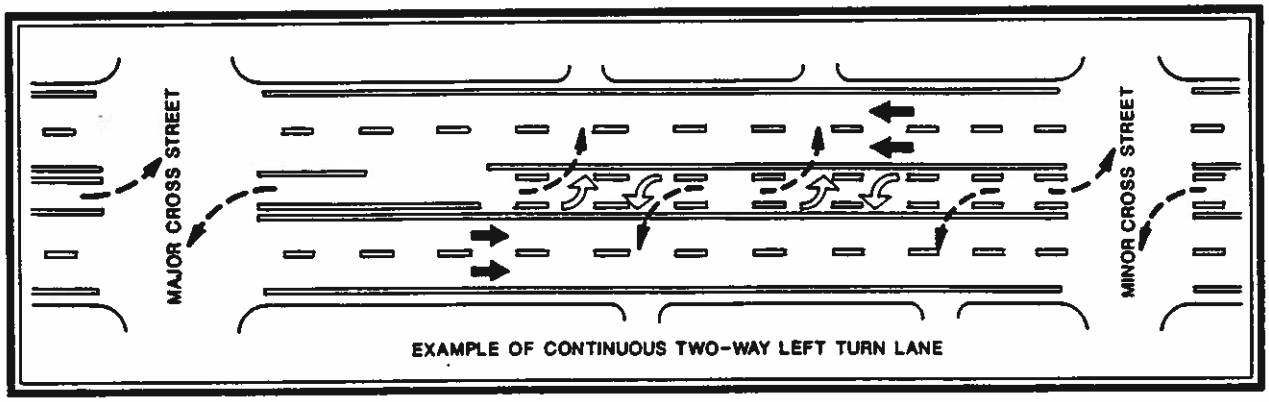

Figure 8.3 Two-Way Left Turn Lanes

8.2.9 Left Turn Restrictions

Left turn restrictions may prove beneficial on suburban routes. The beneficial increase in through traffic capacity caused by limiting left turning movements may offset the effect of increasing travel distances and restriction to access. This is consistent with the SRA goal of accommodating regional trips. Techniques for left turn restrictions are identified in Section 7.2.7 in Chapter 7.

8.2.10 Eliminate Minor Road/Street Access

It is recommended that, where feasible, consideration be given to eliminating access from low volume minor roads and streets to the suburban SRA routes. The feasibility of terminating or rerouting the minor route will depend on variables that include the local street traffic volumes, emergency vehicle response time, and the availability of alternate routes.

8.3 ROADWAY DESIGN FEATURES

8.3.1 Interchanges

The basic criteria for consideration of an interchange will be at suburban SRA intersections that are projected to operate at level of service E or F in year 2010 with conventional improvements. Intersections that operate at level of service D or better are not to be considered as candidates for interchange construction, unless unsafe geometric design features, such as excessive intersection skew, are present.

Suburban SRA routes are frequently characterized by a limited right-of-way availability. Interchange types that require the least amount of right-of-way and therefore considered most appropriate for the suburban SRA routes are the single point (urban) diamond interchange and the compressed diamond.

The single point diamond interchange requires the least amount of right-of-way and has been found to provide more traffic capacity than a conventional diamond interchange. The compressed diamond interchange is more appropriate in situations where access requirements at the intersection corners cannot be eliminated. Access may be permitted onto the interchange ramp, if necessary, near the cross street. When the single point and compressed diamond interchanges are recommended, the SRA must always have the grade separated priority through movement.

Diagrams of these two interchange types are shown on *Figure 7.8* and *Figure 7.9* in Chapter 7. The desirable amount of right-of-way to be protected for both interchange types is indicated on *Figure 8.4*.

For an intersection of two suburban SRA routes, where sufficient right-of-way is available, a cloverleaf interchange design may be considered. The advantage of this interchange type over the diamond interchange is that both intersecting streets have uninterrupted through movements.

A U-turn movement could be added to diamond interchanges between suburban SRAs and lower class/volume cross streets. The underpass U-turn would allow SRA vehicles to access an opposing frontage road without having to pass through signalized intersections on the cross streets (see *Figure 7.10* in Chapter 7).

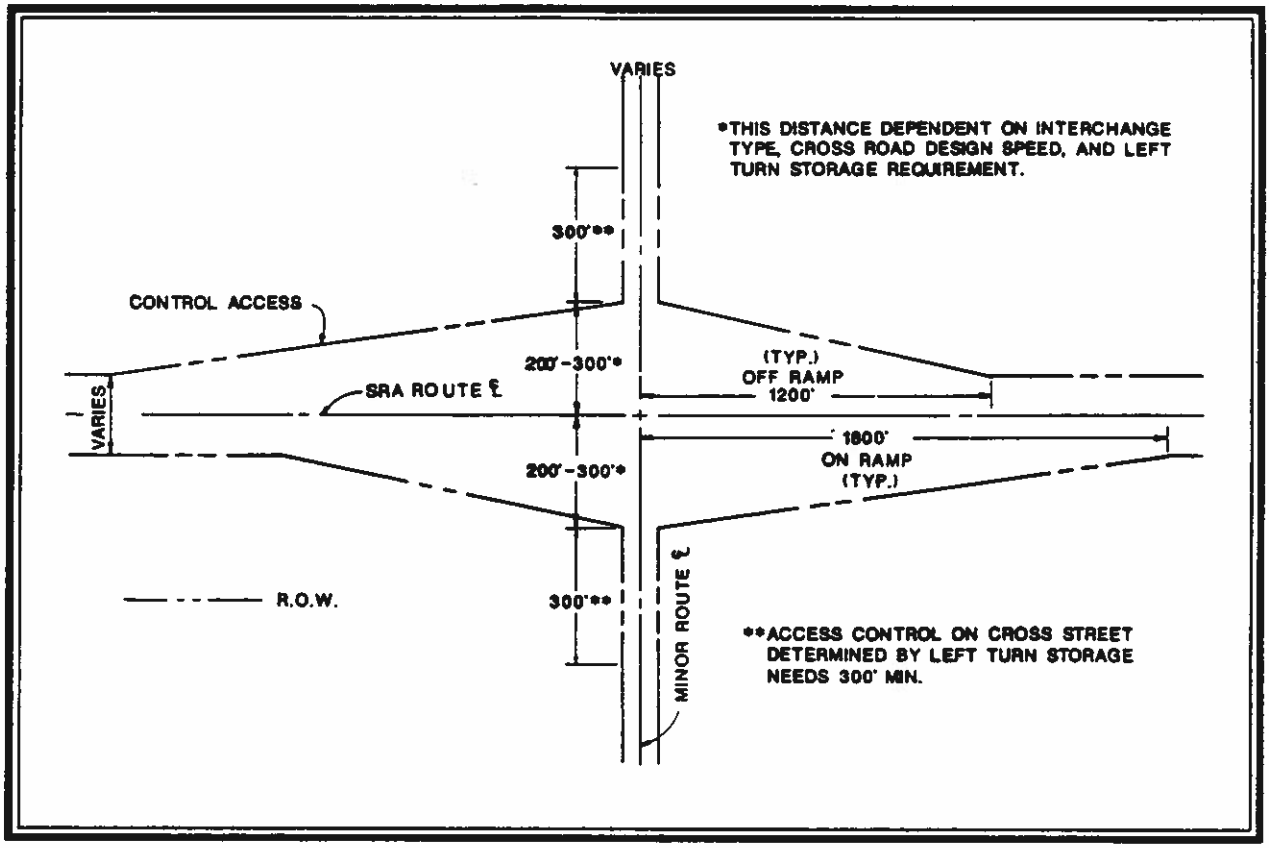

Figure 8.4 Right-of-Way Requirements for Single Point and Compressed Diamond Interchanges

All suburban SRA interchanges should have high mast lighting. The high mast lighting should not create "light pollution" problems from spillover into nearby residential areas.

8.3.2 Restrictive Right-of-Way

Some suburban SRA routes may presently consist of four or five lane pavement section through residential or commercial areas with minimal setbacks. It may not be feasible to obtain the additional right-of-way required for expansion into the desirable roadway cross section at these locations (see *Figure 5.1*).

If a suburban SRA route consists of a four lane cross section (two through lanes in each direction) in a restrictive right-of-way location, it is recommended that emphasis be placed upon the construction of an 18 foot median to separate left turning vehicles from the through stream of traffic. If no additional right-of-way is available for a median, left turns should be permitted only at major intersections. It is also critical to consolidate or control intermittent access point for commercial development and encourage internal circulation roadways outside the SRA right-of-way.

8.3.3 Route Bypasses

Certain suburban SRA routes are characterized by fairly long stretches of roadway that connect suburban central core areas. Milwaukee Avenue (Illinois Route 21) which connects Libertyville, Wheeling and Niles along its SRA segment is an example of such a route. Frequently these suburban central cores features traffic capacity constraints such as narrow right-of-way, minimal setbacks and numerous curb cuts and traffic signals. The desirable suburban SRA route typical section of six through lanes and an 18 foot median will generally not be attainable through such suburban cores.

It may prove advantageous to designate a route bypass for the SRA around these areas. Route bypasses around suburban cores should be designated on parallel facilities reasonably close to the original SRA route and must be clearly signed as such. Route bypasses may be designed to work in tandem with the originally designated SRA or may become the solely designated SRA. In either case, the travel demands of the area and stipulated level of service requirements should be met when a route bypass is proposed.

Due to the extent of suburban development, it is recommended that route bypasses be designated on existing routes and that construction of a new roadway for a route bypass be considered only where large tracts of undeveloped land or unused rights-of-way allow for continuity around the suburban core.

Roadways on the supplemental arterial system may also assist in diverting through traffic from suburban core areas and relieve traffic congestion on SRA routes. Actions would be required to educate the public about alternative routes and to optimize traffic flows on these routes.

8.3.4 Existing Interchanges

All existing interchanges between suburban SRA routes and the expressway/tollway system should be evaluated for their relationship to the entire roadway network. Recommendations for modifying these interchanges should follow the guidelines set forth under Section 7.3.3 in Chapter 7.

8.3.5 Major Projects/Corridors of the Future

The highway and transit major projects/corridors of the future identified in the 2010 Transportation System Development Plan and their relationship to the SRA system are discussed in Section 7.3.4 in Chapter 7.

8.3.6 Commencement/Terminus of SRA Routes

The special considerations involved with commencement/terminus points on SRA routes are discussed in Section 7.3.5 in Chapter 7.

8.4 ACCESS AND RIGHT-OF-WAY

8.4.1 Access Management

It is recommended that access management be coordinated among communities along each suburban SRA route.

The techniques in Section 7.4.1 in Chapter 7 of this report are also applicable to suburban routes.

8.4.2 Right-of-Way Protection

In addition to the techniques identified in Section 7.4.2 in Chapter 7 of this report, the following techniques may be considered for suburban SRA routes.

8.4.2.1 Special Purpose Public Access Easements

Prevailing setback requirements have created long stretches of privately held corridor unobstructed by buildings. This presents an opportunity to expand the right-of-way without substantial building demolition. Public access easements could be acquired in parking and setback areas for use as transit corridors or sidewalks (see *Figure 8.5*).

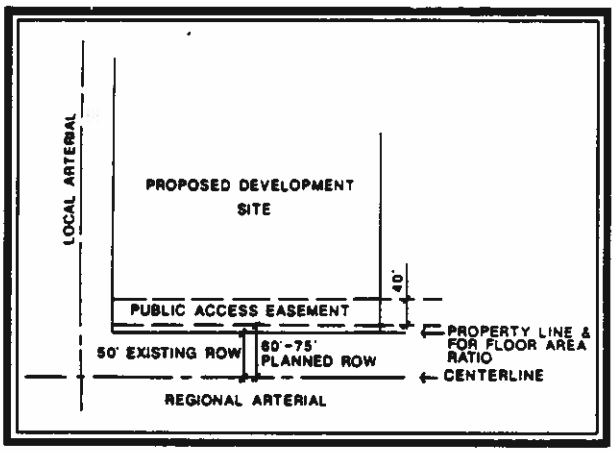

Figure 8.5 Public Access Easements

8.4.2.2 Purchase and Lease Back

Many local communities have acquired properties and then leased them back to their owners as long as the owners continue to live or do business on the property. This is a particularly appropriate strategy in those situations where the land will not be needed quickly or where allowing the buildings to remain would violate setback requirements. This strategy would allow land to be acquired with minimal hardship on the owner and with the understanding that any deviation from local requirements would be temporary.

8.4.2.3 Partial Purchase and Site Rehabilitation

The object of this strategy is to acquire enough of a site as is needed for the right-of-way and to make repairs or build facilities to restore the property to its original function. Examples might include parking spaces and corner businesses. Parking spaces can be rebuilt, if there is space elsewhere on the parcel. Corner commercial enterprises can be moved or rebuilt.

8.5 FREIGHT

Suburban SRA routes are characterized almost exclusively by off-route loading areas for freight vehicles. This is a desirable feature that contributes positively to roadway capacity and is a feature that should be maintained.

8.5.1 Structural Vertical Clearance Improvements

Existing structures on suburban SRA routes should have a minimum vertical clearance of 14 feet - 6 inches. If an existing structure does not meet this requirement, the primary method to develop the desired vertical clearance is to lower the roadway profile. When the minimum vertical clearance requirement cannot be met, consideration should be given to designation of an alternate freight route.

8.5.2 Turning Radius Improvements

Turning radii at intersections should allow the WB-55 design vehicle to make a turn without encroaching into adjacent or on-coming traffic lanes. Intersections that do not meet this requirement and intersections that are widened to provide separate right turn lanes should be constructed to accommodate the WB-55 design vehicle. Intersections that are evaluated for turning radii improvements should be considered for their impact on pedestrians and adjacent development before modifications are proposed.

If a particular suburban SRA route is designed as a Class II truck route, then the design vehicle is a WB-60.

8.5.3 Alternate Freight Route

It is desirable to accommodate freight vehicle on the suburban SRA routes. Alternate freight routes should be considered for segments of suburban SRA routes that have inadequate roadway geometric design features such as substandard clearance requirements at structures and intersections, less than minimum number of lanes, and where access to adjacent properties is not essential.

Frequently suburban central cores feature narrow right-of-way, minimal setbacks and numerous traffic signals. In these situations, it may prove advantageous to designate alternate freight routes because the majority of freight vehicles are making regional trips and are not bound for the suburban core, and a resultant effect would be improved roadway operations through the suburban core. Alternate freight routes should be designated onto parallel roadway facilities reasonably close to the suburban SRA route and must be clearly signed as such.