Strategic Regional Arterial

Palatine/Willow Road (Vol. I)

**from U.S. Route 14 (Northwest Highway)
to Interstate 94 (Edens Expressway)**

Operation GreenLight

Illinois Department of Transportation
April, 1993

FOREWORD

Palatine/Willow Road is a Strategic Regional Arterial in Cook County between U.S, Route 14 (Northwest Highway) in Palatine and Interstate 94 (Edens Expressway) in Northfield. The Strategic Regional Arterial (SRA) report for Palatine/Willow Road has been prepared for the Illinois Department of Transportation and the Strategic Regional Arterial Subcommittee of the Work Program Committee of the Chicago Area Transportation Study by Harland Bartholomew & Associates, Inc.

As an SRA route, Palatine/Willow Road is intended to function as part of a regional arterial system, carrying high volumes of long-distance traffic in conjunction with other SRA routes and the regional expressway and transit systems. This report is one element of a long-range plan for all routes in the SRA network. Together, the route studies constitute a comprehensive, coordinated plan for the entire SRA network.

Volume I of this report includes a description of the SRA study objective and process, a detailed exposition and analysis of the existing route conditions, recommendations for ultimate, low-cost and post-2010 improvements, and exhibits of existing facility, environmental, and developmental characteristics and recommended improvements. Volume II contains details and documentation of the public involvement process including citizen comments.

SUMMARY OF RECOMMENDATIONS

The SRA Route Palatine/Willow Road is divided into four route segments. (See *Figure i.i.*) Recommendations are made for each route segment, and a summary of the major recommendations is presented below.

SRA Segment 1: U.S. Route 14 (Northwest Highway) to Illinois Route 53

- Two through lanes in each direction with a 12-foot flush median from U.S. Route 14 (Northwest Highway) to Williams Drive
- Retention of the existing cross-section from Williams Drive to Illinois Route 53 which includes two through lanes in each direction plus frontage roads

SRA Segment 2: Illinois Route 53 to Interstate 294 (Tri-State Tollway)

Ultimate Improvement

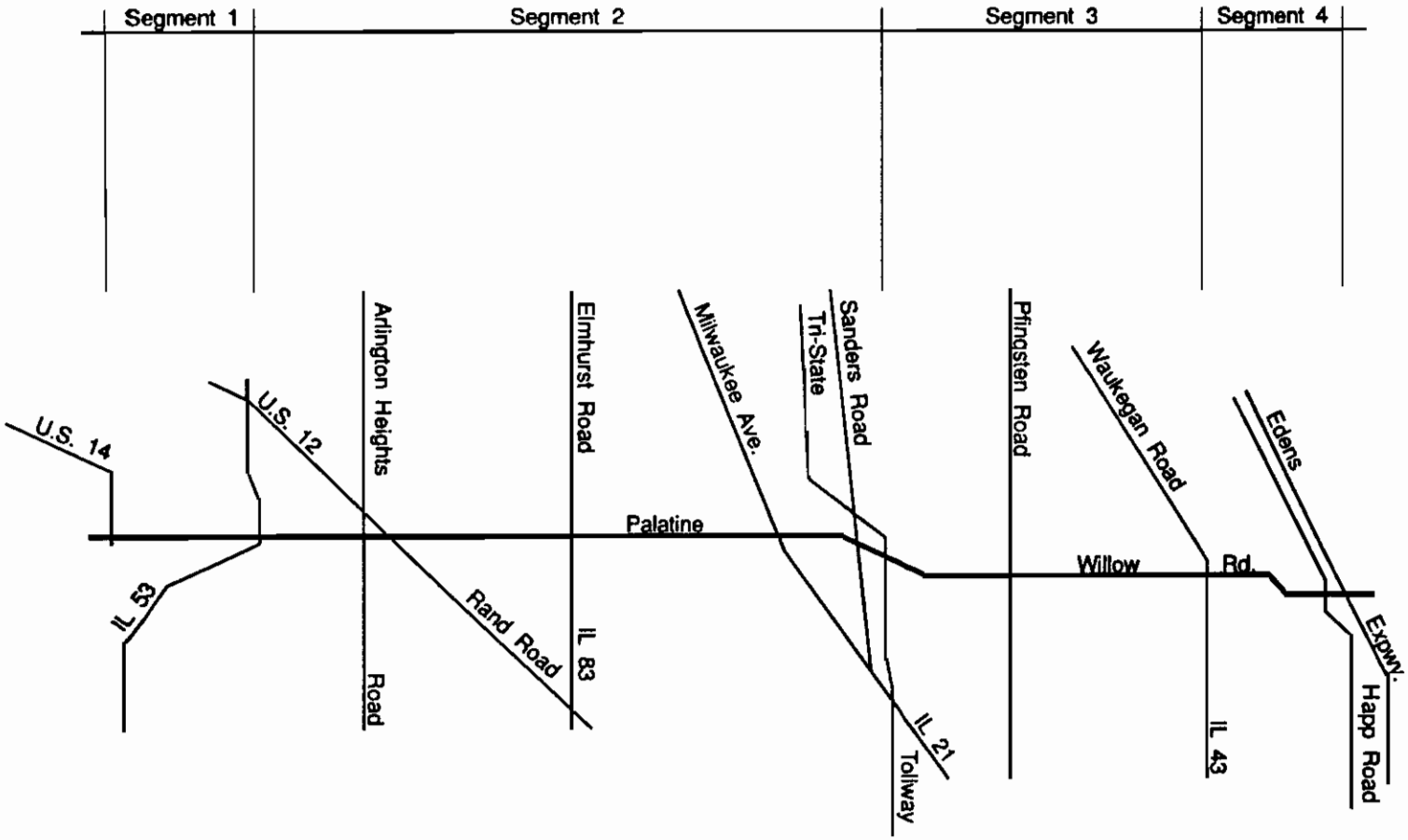
- Two through lanes in each direction plus one-way frontage roads or three through lanes in each direction with no frontage roads. Intersection improvements at Kennicott Avenue, Arlington Heights Road, U.S. Route 12 (Rand Road), Windsor Drive, Schoenbeck Road, Wheeling Road, Sanders Road and Interstate 294 (Tri-State Tollway)

Post-2010 Improvement

- Implementation of an access controlled expressway facility with two through lanes in each direction plus one-way frontage roads. New grade separations at Kennicott Avenue, Arlington Heights Road, U.S. Route 12 (Rand Road), Windsor Drive, Schoenbeck Road, Wheeling Road and Sanders Road

SRA Segment 3: Interstate 294 (Tri-State Tollway) to Illinois Route 43 (Waukegan Road)

- Three through lanes in each direction plus an 18-foot median within existing 100 foot right-of-way between Interstate 294 (Tri-State Tollway) and Lehigh Avenue
- Three through lanes in each direction plus a 30-foot median within ultimate desirable right-of-way width of 150 feet between Lehigh Avenue and Illinois Route 43 (Waukegan Road)
- Intersection improvements at Illinois Route 43 (Waukegan Road)



Palatine/Willow Road
prepared by Harland Bartholomew & Associates, Inc.

Segment Location Map
Figure i.1

SUMMARY OF RECOMMENDATIONS *(cont.)*

SRA Segment 4: Illinois Route 43 (Waukegan Road) to Interstate 94 (Edens Expressway)

- Two through lanes in each direction plus a 12-foot flush median within the existing right-of-way
- Extend signal interconnect from Northfield Road to Old Willow Road in Segment 3
- Structure modification at the Main Fork of the North Branch of the Chicago River

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SECTION ONE
INTRODUCTION

1.1 THE STRATEGIC REGIONAL ARTERIAL SYSTEM AND OPERATION GREENLIGHT

The Strategic Regional Arterial (SRA) system is a 1340-mile network of existing roads in Northeastern Illinois. The system includes 146 route segments in Cook, DuPage, Kane, Lake, McHenry and Will Counties. *(See Figure 1.1.)* As part of the 2010 Transportation System Development Plan adopted by the Chicago Area Transportation Study (CATS) and Northeastern Illinois Planning Commission (NIPC), the SRA system is intended to supplement the existing and proposed expressway facilities by accommodating a significant portion of long-distance, high volume automobile and commercial vehicle traffic in the region. Many of the roads in the SRA system, including Palatine/Willow Road, are already on the arterial highway network of the Illinois Department of Transportation (IDOT) and now carry high volumes of long-distance traffic.

According to forecasts prepared by the Chicago Area Transportation Study, travel in the year 2010 in Northeastern Illinois is expected to increase by 23 percent over 1980 levels. In the last few years, rapid economic development and growing population have resulted in significant increases in congestion on the regional expressway system, as well as on arterial and local roads in many parts of the region. Creation of the SRA system is a major component of Operation GreenLight, an eight-point plan to deal with urban congestion and improve regional mobility. The plan was developed by IDOT in cooperation with the Illinois State Toll Highway Authority (ISTHA), CATS, NIPC and the Regional Transportation Authority (RTA). In addition to creating the SRA network, Operation GreenLight addresses the following major transportation issues:

- Developing Major Transit/Highway Facilities,
- Improving Other Key Arterial Roadways,
- Identifying Strategic Transit Improvements,
- Reducing Demand for Highway Use, and
- Increasing Environmental Consideration.

Together, the components of Operation GreenLight are a blueprint for a comprehensive approach to improve transportation in Northeastern Illinois. As part of this comprehensive approach, the SRA system is designed to (1) improve regional mobility by providing a comprehensive network of arterial routes designed to carry significant volumes of long-distance traffic across the region, (2) complement the regional transit and highway facilities by providing access for regional trips on these facilities, and (3) provide for long-distance travel to supplement the regional expressway system.

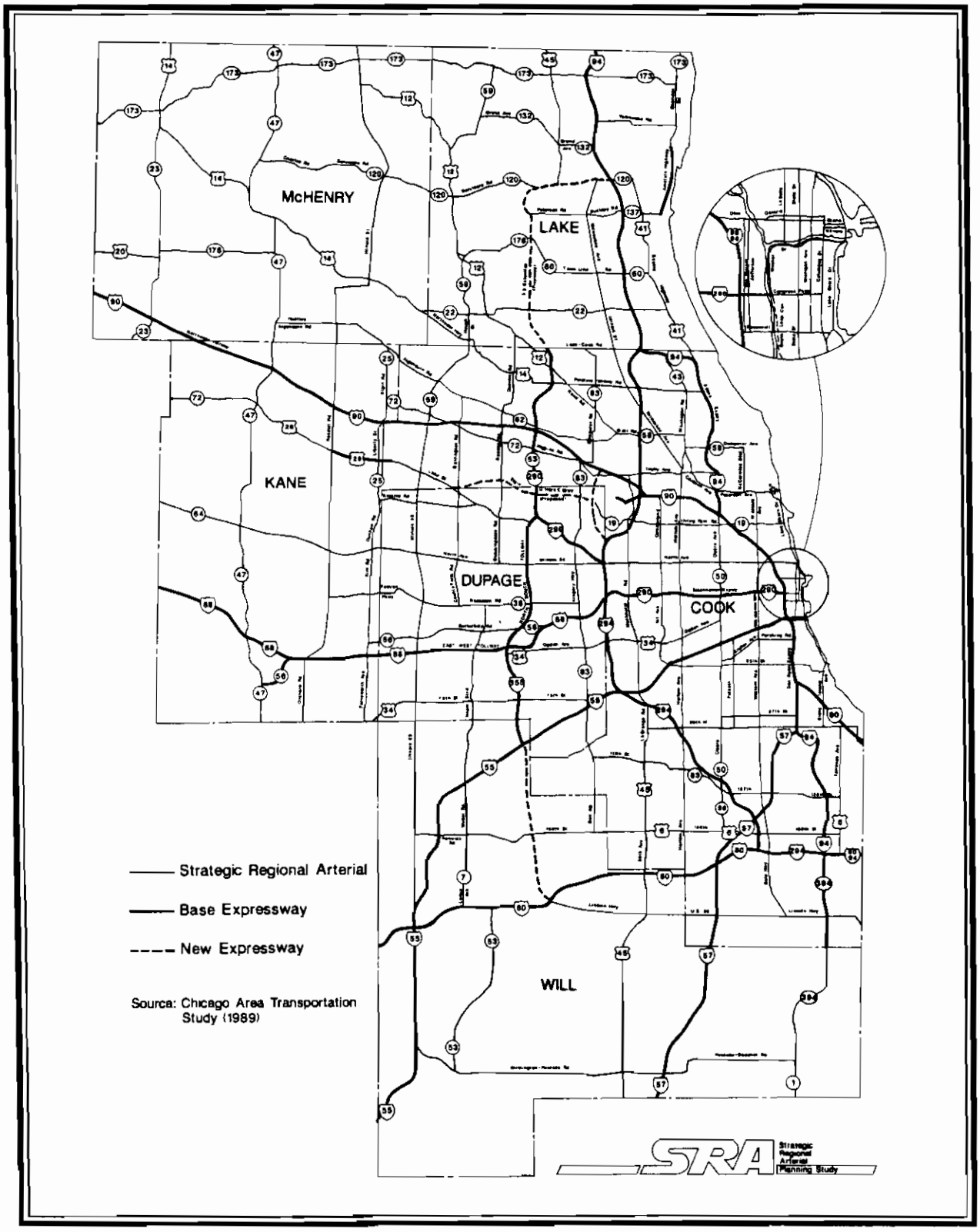


Figure 1.1 The Strategic Regional Arterial System

1.2 SRA ROUTE TYPES

Within the SRA network there are significant differences in the roadway environment. These differences affect how routes will function in the system. Three different types of SRA routes have been designated, corresponding to three types of roadway environment:

- Urban Routes,
- Suburban Routes, and
- Rural Routes.

The designation of route types is based upon the projected 2010 density of development within the Chicago region. Palatine/Willow Road is designated as a suburban route. *(See Figure 1.2.)* Urban SRA routes are located in the City of Chicago and adjacent portions of more densely developed suburbs such as Oak Park, where projected densities are greater than 5.0 households per acre. Suburban SRA route designations, where projected densities are between 0.5 and 5.0 households per acre, apply to most suburban Cook and Lake Counties, all of DuPage County, and the more developed portions of McHenry, Kane and Will Counties. Rural SRA routes are located in the outer portions of Lake, McHenry, Kane and Will Counties, where projected densities are less than 0.5 households per acre.

SRA routes located in densely urbanized areas typically are existing routes with minimal possibilities for roadway expansion, but where improvements could be made to intersections, transit facilities and structural clearances. For routes in developing suburban areas, additional lanes on roadways, new connections to improve route continuity, and operational improvements such as signal coordination may be considered. In rural areas, right-of-way preservation and access control would provide for movement of through traffic and accommodate future needs.

1.3 DESIRABLE ROUTE CHARACTERISTICS AND TECHNIQUES FOR SPECIAL CIRCUMSTANCES

Desirable route characteristics for the year 2010 have been delineated for each of the three SRA route types - Urban, Suburban and Rural - related to the roadway environment. These desirable characteristics are intended to provide adequate traffic service and geometric design, serving as criteria for planning the individual SRA routes. *Table 1.1* lists desirable characteristics for SRA suburban routes in the year 2010, including typical geometrics, operational measures, level of service, and access policies. These desirable characteristics are the basis for defining the desirable SRA suburban route cross-section which is shown in *Figure 1.3*.

As planning criteria, these design features and other route characteristics are designed to be generally applicable to most SRA suburban routes. However, the SRA planning process recognizes that there may be situations along suburban routes where certain design features are not appropriate or where special treatment of some features is desirable, such as:

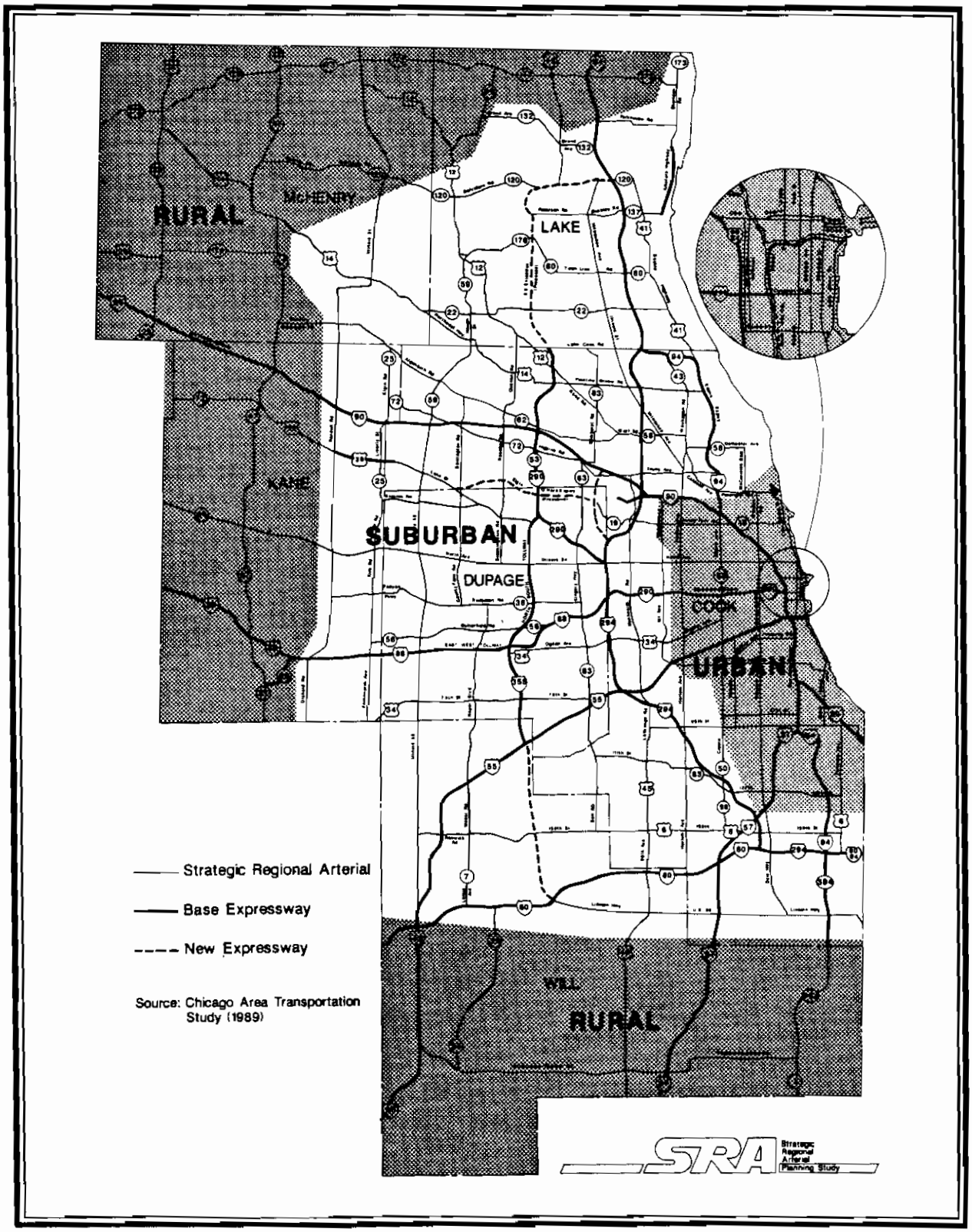


Figure 1.2 Route Types on the Strategic Regional Arterial System

Table 1.1
2010 Desirable Route Characteristics
Suburban Strategic Regional Arterials

Right-of-way Width	120' - 150'
Level of Service (Peak Hour)/Design Speed	C or D / 45 mph
Number of Through Lanes	3 in each direction; 12' width
Median Width	18' - 46', raised
Right Turns	Turn lanes at all major intersections
Left Turns	Dual left turn lanes at all major intersections
Shoulders	Where appropriate, 10' width paved
Curbs	Yes, with 2' gutters
Sidewalks	Where appropriate, 5' width
Parking	Not recommended
Cross Street Intersections	Signals with collectors and arterials New local roads right-in/right-out only
Curb Cut Access	Consolidate access points at 500' spacing with cross easements
Transit	Bus turnouts, signs and shelters. Express bus service only. Signal pre-emption and HOV potential.
Number of Traffic Signals Per Mile	4 maximum
Signalization	Synchronization with pedestrian actuation where needed.
Freight: Radii	WB-55 typical/WB-60 Type II truck route
Vertical Clearances	New structures: 16'-3" Existing Structures: 14'-6"
Loading	Off-street loading

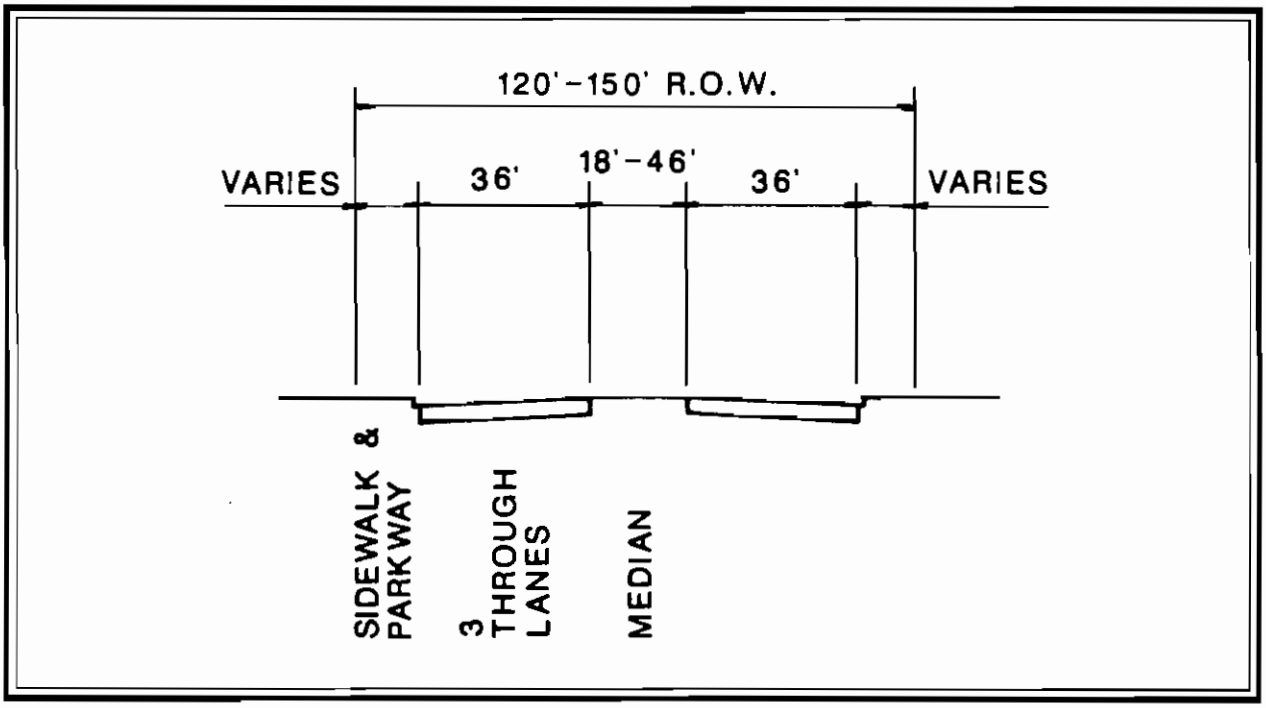


Figure 1.3 Desirable Suburban SRA Cross-Section

- Construction of grade separations or interchanges;
- Bus lane/high occupancy vehicle (HOV) lanes;
- Signal preemption capability for transit vehicles;
- Demand actuated signals at transit stations;
- Use of continuous two-way left-turn lanes
- Designation of route bypasses for constricted areas; or
- Location of transit or pedestrian facilities in public easements outside the right-of-way.

While not all of these special techniques may be applicable to Palatine/Willow Road, they illustrate the range of treatments which have been considered.

A full description of the recommended designs and features and techniques for special circumstances applicable to all SRA routes can be found in the Strategic Regional Arterial Design Concept Report, dated March, 1991.

1.4 STUDY OBJECTIVES

As part of the SRA system, Palatine/Willow Road is intended to function as a regional arterial route, carrying high volumes of long-distance traffic in conjunction with other SRA routes and the regional expressway and transit systems. To implement the SRA system, development of a comprehensive, long-range plan for the entire network is necessary. The planning process for the SRA system is to be accomplished over a five year period, with individual route studies comprising one-fifth of the total system to be undertaken each year. Together, the route studies constitute a comprehensive, coordinated plan for the entire SRA network.

The Palatine/Willow Road study identifies low-cost, ultimate and post-2010 improvements to enable the route to function as part of the SRA system. The following objectives have guided the study process.

- Determine the types of roadway improvements needed for each route including additional lanes, signalization and interchanges.
- Define right-of-way requirements.
- Enhance access to the regional transit system.
- Identify ways to manage access which would improve through traffic movement and reduce conflicts.
- Coordinate recommended route improvements with projected development.

- Identify necessary improvements to accommodate commercial traffic.
- Accommodate necessary bicycle and pedestrian travel.
- Identify potential environmental concerns.

The completed study will guide implementation of improvements on Palatine/Willow Road, so that individual projects are consistent with the coordinated long-range development of the route as an integral part of the SRA system.

1.5 THE SRA PLANNING STUDY PROCESS

The SRA planning study process is accomplished through the following six phases:

Data Collection/Evaluation. The SRA planning process is designed to efficiently use available data. For each route, data is assembled from right-of-way information, roadway plans, traffic volume projections, transit information, bicycle usage, adjacent development characteristics, accident data, environmental studies and other sources, and is analyzed to establish current conditions, constraints and improvement needs.

Route Analysis. Possible improvements for the SRA route are determined by incorporating the recommended or special design features in specific configurations for each segment of the overall route. These configurations include alternative designs and techniques where necessary to accommodate local conditions or constraints.

Environmental Issues/Screening. While the SRA planning process does not include detailed environmental assessments or analysis of specific mitigation measures, a screening process identifies significant environmental conditions along each route. The results of this process are used to evaluate improvement alternatives and serve as an early indicator of environmental issues for future design studies.

Construction Cost Estimates/Identification of Right-of-Way Needs. Construction cost estimates for each route segment are prepared for low-cost, ultimate and post-2010 improvements. Right-of-way needs to accommodate recommended ultimate improvements also are identified.

Local Involvement and Coordination. Throughout the SRA route planning process, the involvement of local and regional agencies is an important consideration. Information and coordination efforts include forming Advisory Panels for each SRA route, which work with IDOT during the planning process. A regular newsletter for each Panel informs members about the SRA program and ongoing route studies. A public hearing in an open house format is conducted for each route.

Final Route Improvement Plan/Report. As the final step in the planning process, a report for each SRA route documents the recommended improvements and findings.

1.6 STUDY DATA SOURCES AND METHODOLOGIES

Existing Roadway Characteristics Several data sources were compiled to create route inventories. Traffic counts for the route segments and for selected major intersections were obtained from IDOT Traffic Volume Maps and 1990 IDOT Intersection Turning Movement Data. The route was photographed using a video camera. On-site inspection confirmed IDOT scoping report data for number of lanes, location of traffic signals and turn bays, structures, setbacks, pavement width, speed limit, existence of sidewalks and other appurtenances, frontage roads, and median. The locations of median and curb cuts were identified by type: unlimited, frequent, coordinated, managed. Pavement widths were further confirmed with construction plan sheets whenever these were available. Sidwell maps provided right-of-way widths.

Existing Transit Characteristics Data on existing transit service and facilities were obtained from published data and reports as well as limited field verification of location and characteristics of transit facilities. Basic information on transit services in the SRA study area, including routes and schedules, was obtained from data compiled by the Division of Public Transportation of Illinois DOT. This was supplemented by reports from operating entities, including Pace, Metra and the CTA, which provided information on transit ridership and other operating characteristics. Locations of transit facilities, including bus stops and facilities at commuter rail and rapid transit stations, were verified in the field.

Development Characteristics Development characteristics include existing and planned uses. Current uses were included in the route inventory and derived from NIPC aerial photography, video and on-site inspection. These uses were identified in some detail and later grouped into more general development categories, such as residential, commercial, industrial, public and semi-public. Access was examined in the course of this analysis.

Planned uses were identified by municipal officials in response to a specific inquiry at the beginning of the SRA study, within adopted Comprehensive and Specific Plans, and during meetings with municipal officials. Such information was used to assess potential route impact and plan for access.

Environmental Considerations Because the purpose of the analysis was to identify those conditions and uses which *may* be negatively impacted by improvement of the SRA, the selection of data was as inclusive as possible.

Floodplain boundaries were obtained from the Federal Emergency Management Agency (FEMA) on the Flood Boundary and Floodway Maps and the Flood Insurance Rate Maps. The Illinois Department of Conservation (IDOC) National Wetlands Inventory Maps, local land use plans, and on-site surveys were used to identify wetlands and any streams which were not identified by FEMA.

IDOC also provided information from the Illinois Natural Heritage Database about endangered, threatened and watched species in Illinois and about natural areas. An endangered species is any species which is in danger of extinction as a breeding species in Illinois, while a threatened species is any breeding species which is likely to become a state endangered species within the foreseeable future. A species on the watch list is not listed as endangered or threatened, but is of special concern and could eventually become listed. Unless it could be determined that the species or area is not adjacent to the route, it is included in this inventory. This information was located to the nearest square mile.

Location of historic buildings, districts, and markers were provided by the National Register of Historic Places in Illinois, the Inventory of Historic Structures prepared by the Illinois Historic Structures Survey, the Inventory of Historic Landmarks prepared by the Illinois Historic Landmarks Survey, the Illinois State Historical Markers Text Book, and IDOT. The buildings, districts, and other structures appearing on the Inventory of Historic Landmarks are not necessarily significant historical resources. This inventory includes all buildings constructed prior to World War II. Those buildings with aesthetic merit are included on the Inventory of Historic Structures. Historic districts were most often listed on the National Register of Historic Places in Illinois, but others appeared in the Inventory of Historic Landmarks. Selected information was refined by IDOT design studies.

The Hazardous Waste Research and Information Center provided a list of waste disposal and hazardous waste dumping sites. The landfills and dumps are located to the nearest square mile. Unless it could be determined that the site is not adjacent to the route, it is included in this inventory. The list notwithstanding, it is recommended that any site used for industrial purposes at any time be tested for hazardous waste prior to roadway facility development.

The analysis of environmentally sensitive land uses included: schools, churches, theaters, auditoriums, parks, cemeteries, recreation facilities, nature and forest preserves, hospitals, nursing homes, and hotels. While all such facilities and uses have been identified, there is no presumption that all such uses would be negatively impacted by roadway improvements.

Year 2010 Traffic Demand Projections The Chicago Area Transportation Study (CATS) projected Year 2010 traffic for all routes in the SRA system, and for tollways and expressways. Projections made for the SRA system are different from those made for most projects, because these projections assume that all routes in the system have been improved as suggested in the design criteria for the system. This assumption insures that no one route or part of a route would be expected to handle more than its share of the expected 2010 traffic volumes which may be traveling in that general direction. It also insures that no part or segment of a route would be improved more than is necessary to provide a consistent level of service throughout the route.

The projection methodology for SRA routes included four phases: trip generation, trip distribution, trip mode, and trip assignment. Collectively, the number of vehicle trips was projected for each SRA to SRA and SRA to expressway junction. Results are expressed in ranges corresponding to the number of lanes of capacity required to serve the demand.

Roadway Capacity Estimates A roadway capacity analysis estimates how many vehicles can be carried on the roadway. The analysis allows change in several conditions that affect the flow of traffic. The capacity of an arterial roadway depends most heavily on the number of vehicles that can be accommodated at its signalized intersections, so a group of variables describes how long the average vehicle is stopped at each signal. The number of signals and distance between them is included. Variables relating to the roadway and its operation, such as the number of through lanes in each direction; how many vehicles each lane can accommodate; the posted speed; how many vehicles are likely to make turns; and the characteristics of rush hour traffic, complete the information used in the analysis.

Cost Estimates Cost estimates include a standardized factor for land value added to construction cost estimates typical for the improvement type. The estimates are provided in 1991 dollars.

1.7 ORGANIZATION OF THE REPORT

This report on the Palatine/Willow SRA route study is divided into four sections:

Section 1, Introduction, provides information about the SRA system and Operation GreenLight; SRA route types; the Palatine/Willow Road SRA study area; study objectives; and the organization of the report.

Section 2, Route Overview, presents a general description of the study process; existing route characteristics; and type of recommended improvements for the overall route.

Section 3, Route Characteristics and Improvements, presents a detailed analysis of existing route characteristics and recommended route improvements. These sections correspond to the following route segments on Palatine/Willow Road.

- ***Section 3.1:*** U.S. Route 14 (Northwest Highway) to Illinois Route 53
- ***Section 3.2:*** Illinois Route 53 to Interstate 294 (Tri-State Tollway)
- ***Section 3.3:*** Interstate 294 (Tri-State Tollway) to Illinois Route 43 (Waukegan Road)
- ***Section 3.4:*** Illinois Route 43 (Waukegan Road) to Interstate 94 (Edens Expressway)

For each route segment the following analyses are presented:

Existing Facility Characteristics. The existing facility characteristics are defined. Current traffic volumes are listed. Existing right-of-way, number of lanes, pavement widths, location of existing traffic signals and sidewalks, existing transit usage and routes, location of structures and other appropriate existing facility characteristics are discussed and shown on the corresponding aerial base maps.

Environmental Characteristics. Environmental characteristics of the route segment are defined. Existing streams, wetlands, and floodplains; historic properties, landmarks and districts; flora and fauna; waste disposal sites; sensitive land uses and other environmental characteristics are discussed and shown on the corresponding aerial base maps.

Existing and Projected Development Characteristics. The existing and projected development characteristics of the route segment are analyzed. Jurisdictional boundaries are defined. Existing land use characteristics are examined with respect to the types, density or intensity of use, and setbacks and access locations. Future development potential is examined by identification of vacant land, redevelopment plans or likelihood and other planned development in the vicinity. Finally, public and institutional areas are identified by location and type. The existing and projected development characteristics are shown on corresponding aerial base maps.

Recommended Improvements. The recommended improvements are identified in this section for each route segment. Low-cost, ultimate and post-2010 improvements are specified in the categories of roadway, traffic signalization, access management, transit and other relevant areas. Right-of-way requirements for the implementation of the recommended improvements are identified. Potential environmental considerations for the implementation of the recommended improvements and right-of-way expansion are analyzed. Cost estimates relating to construction of the recommended improvements and acquisition of right-of-way are given.

Section 4, Public Involvement summarizes the public involvement process during the study, including the Palatine/Willow Road SRA Advisory Panel meetings, the Advisory Panel newsletters, the public hearing and other efforts to promote local involvement in the study process.

SECTION TWO
ROUTE OVERVIEW

2.1 THE PALATINE/WILLOW ROAD SRA STUDY AREA

Palatine/Willow Road is an SRA route from U.S. Route 14 (Northwest Highway) to Interstate 94 (Edens Expressway). *(See Figure 2.1.)* It is located in Cook County and passes through the communities of Palatine, Arlington Heights, Wheeling, Prospect Heights, Glenview, Northbrook and Northfield. The route is approximately 15 miles long.

2.2 REGIONAL TRANSPORTATION FACILITIES

Figure 2.1 indicates the existing and proposed linkages for Palatine/Willow Road to the regional transportation system as defined in the 2010 Transportation System Development Plan prepared by the Chicago Area Transportation Study (CATS).

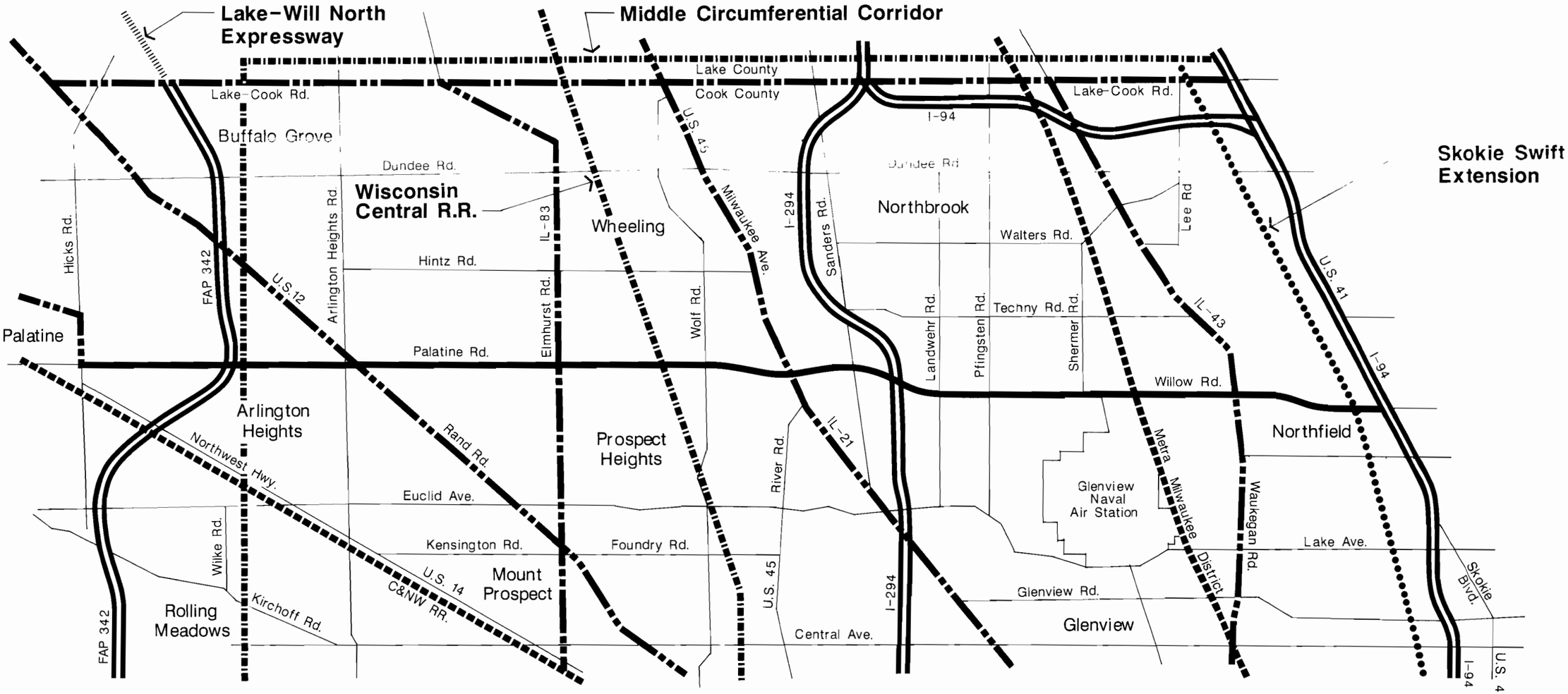
Palatine/Willow Road intersects with three existing expressways and five other SRA routes. The SRA routes are: U.S. Route 14 (Northwest Highway), U.S. Route 12 (Rand Road), Illinois Route 83 (Elmhurst Road), Illinois Route 21 (Milwaukee Avenue) and Illinois Route 43 (Waukegan Road). The expressways are: Illinois Route 53, Interstate 294 (Tri-State Tollway) and Interstate 94 (Edens Expressway).

Metra commuter rail service is provided between Fox Lake and Chicago Union Station on the Chicago, Milwaukee, St. Paul & Pacific Line which intersects Willow Road between Shermer Road and Illinois Route 43. There are stations for this rail line in Northbrook and Glenview.

The 2010 Transportation System Development (TSD) plan prepared by CATS identifies two proposed transit projects which would cross Palatine/Willow Road. The first project is the Wisconsin Central Railroad, and it would intersect Palatine Road between Illinois Route 83 (Elmhurst Road) and Wolf Road. The second project is the 37-mile long Middle Circumferential Corridor which would intersect Palatine Road east of Illinois Route 53. The proposed project follows Lake-Cook Road west from U.S. Route 41 (Skokie Highway), and then runs south through northwest Cook County and east-central DuPage County. It would provide transit service to employment and population centers along Lake-Cook Road, west of O'Hare Airport, and around either Woodfield or Oak Brook activity centers. Connections would be provided with five existing and three proposed transit lines, serving suburb-to-suburb, inbound and reverse commuting needs.

2.3 PROJECTED TRAVEL DEMAND

Figure 2.2 indicates the existing and projected 2010 travel demand in terms of average annual daily traffic (AADT) for Palatine/Willow Road. The projected 2010 AADT travel demand forecasts are taken from the regional travel simulation model developed by CATS.



Palatine/Willow Road SRA Route

Other SRA Route

Existing Expressway

Major Transit Project

Existing Major Transit Facility

Major Highway Project

Major Transit Facility Corridor of the Future

north

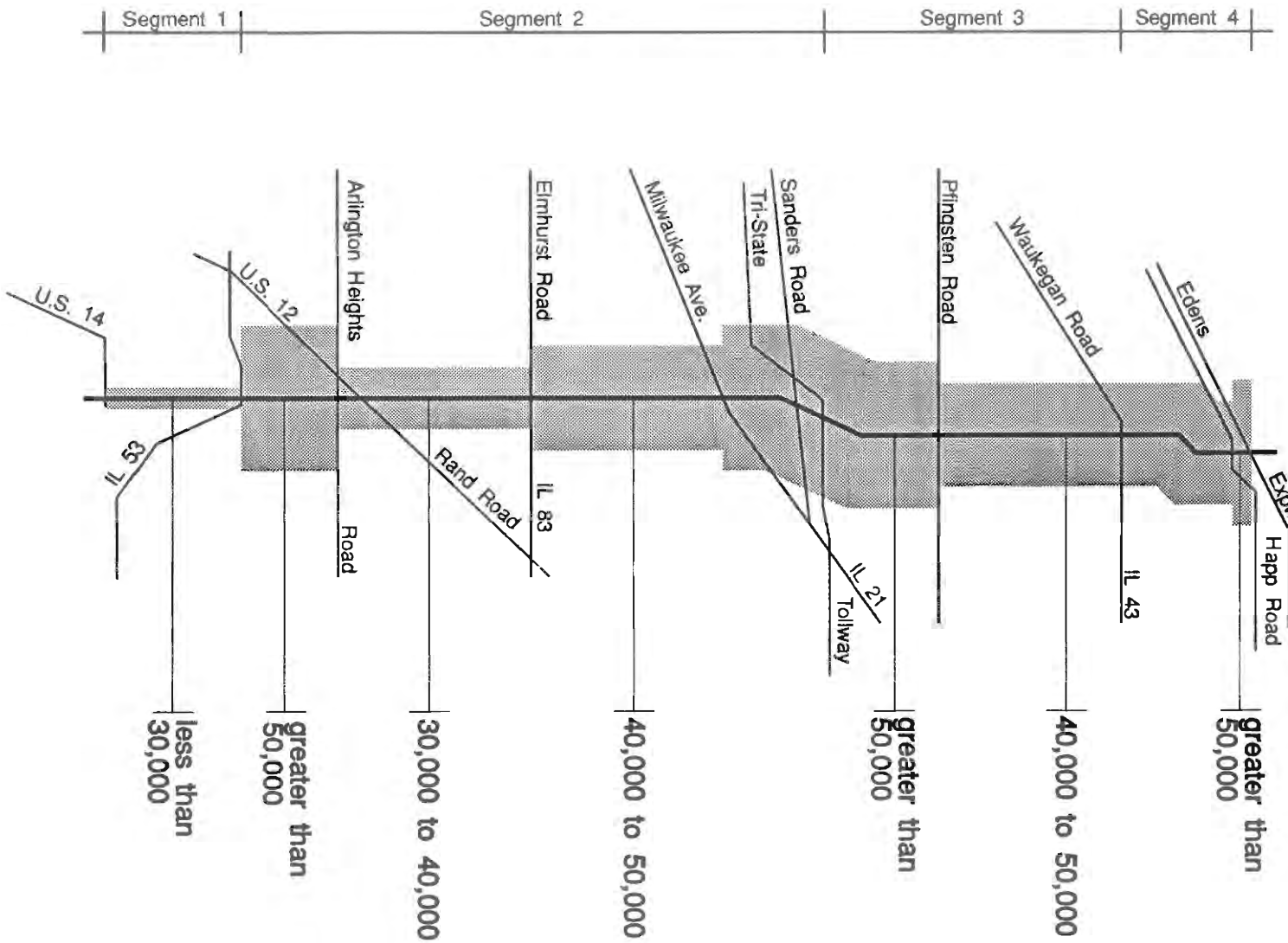
Palatine/Willow Road

Regional Transportation Facilities

SRA Strategic Regional Arterial Planning Study

prepared by Harland Bartholomew & Associates, Inc. for the

ILLINOIS DEPARTMENT OF TRANSPORTATION



Source: Chicago Area Transportation Study

Palatine/Willow Road
prepared by Harland Bartholomew & Associates, Inc.

2010 Projected Travel Demand Volumes
Figure 2.2

2.4 ROUTE AREA TYPES

Palatine/Willow Road has been classified as a suburban SRA route. The design speed for a suburban SRA is 45 miles per hour, and the desirable minimum level of service is "C/D" at which average travel speeds are between 40 and 55 percent of the typical free flow speed of 40 miles per hour.

2.5 EVALUATION OF EXISTING ROUTE CHARACTERISTICS AND RECOMMENDED ROADWAY IMPROVEMENTS

2.5.1 EXISTING ROUTE CHARACTERISTICS

The route connects the Palatine Road and Willow Road alignments at Interstate 294 (Tri-State Tollway). It is called Palatine Road west of Interstate 294 (Tri-State Tollway) and Willow Road east of Interstate 294. The route is termed Palatine/Willow Road throughout this report.

The existing route characteristics for Palatine/Willow Road vary significantly over the length of the route. Palatine Road between Illinois Route 53 and Interstate 294 (Tri-State Tollway) was built as a two lane road in the early 1930s. During the 1960s a plan was developed to convert the road to an expressway. To that end, additional right-of-way was acquired, and the roadway was widened to its current configuration as far as Illinois Route 21 (Milwaukee Avenue). The right-of-way width generally ranges between 100 and 150 feet except for the area between Arlington Heights Road and U.S. Route 12 (Rand Road) where the width reaches 200 feet.

Between U.S. Route 14 (Northwest Highway) and Illinois Route 53 there are two through lanes in each direction. The predominantly residential area between Williams Drive and Illinois Route 53 is accessed via frontage roads.

Consistent with the expressway concept, access to Palatine/Willow Road between Illinois Route 53 and Arlington Heights Road is controlled by frontage roads on both sides of the route. Kennicott Avenue is the only signalized intersection between Winston Drive and Arlington Heights Road. The adjacent development west of Arlington Heights Road is largely residential.

Through the intersections of Arlington Heights Road and U.S. Route 12 (Rand Road) the roadway cross-section consists of three through lanes in each direction with no frontage roads. This area is part of a triangle of roadways which includes the intersection of U.S. Route 12 and Arlington Heights Road. There are shopping centers abutting all roadways within this triangle.

Between U.S. Route 12 (Rand Road) and Sanders Road there are two through lanes in each direction, and access is controlled by two-lane, one-way frontage roads on both sides of the roadway. Cross street traffic is accommodated by at-grade signalized intersections at Windsor Drive, Schoenbeck Road and Wheeling Road, and interchanges at Illinois Route 83 (Elmhurst Road), Wolf Road and Illinois Route 21 (Milwaukee Avenue). The primary land use

is residential between U.S. Route 12 (Rand Road) and Wheeling Road, and industrial between Wheeling Road and Illinois Route 21. Palwaukee Airport is between Wolf Road and Illinois Route 21 north of the route.

Between Sanders Road and Interstate 94, the eastern terminus of the SRA route, Palatine/Willow Road takes on the character of a typical arterial highway. There are two through lanes in each direction between Sanders Road and Illinois Route 43 (Waukegan Road), and one through lane in each direction eastward to Interstate 94 (Edens Expressway). There are interchanges with Interstate 294 (Tri-State Tollway) and Interstate 94 (Edens Expressway).

Land use varies considerably east of Illinois Route 21. Palatine/Willow Road travels through the Allison Woods Forest Preserve between Illinois Route 21 and Sanders Road. There is office development near the interchange with Interstate 294, and it is proposed for the area between Lehigh Avenue and Illinois Route 43 (Waukegan Road). Between Landwehr Road and Shermer Road there is a mixture of commercial and residential areas. Most development east of Illinois Route 43 is residential.

Table 2.1 presents a comparison between the existing and recommended right-of-way widths and number of through traffic lanes.

Table 2.1
Existing and Ultimate Recommended Right-of-Way Width and Number of Through Traffic Lanes

	Right-of-Way Width (feet)		Number of Through Lanes in Each Direction	
	Existing	Recommended	Existing	Recommended
DESIRABLE STANDARD FOR A SUBURBAN SRA		120-150		3
Segment 1				
U.S. Route 14 to Illinois Route 53	100-150	100-150	2	2
Segment 2				
Illinois Route 53 to Arlington Hts. Rd.	120-260	*	2	2-3 (1)
Arlington Heights Road to U.S. Route 12	180-200	*	3	3
U.S. Route 12 to Illinois Route 21	120-200	*	2	2-3 (1)
Illinois Route 21 to Interstate 294	99-100	*	2	2-3 (1)
Segment 3				
Interstate 294 to Landwehr Road	100	100	2	3
Landwehr Road to Lehigh Avenue	100	100	2	3
Lehigh Avenue to Illinois Route 43	100	150	2	3
Segment 4				
Illinois Route 43 to Interstate 94	100	100	1-2	2

(1) Number of through lanes to be determined during Phase I Study of Alternatives
* Existing right-of-way adequate for ultimate improvement

2.5.2 RECOMMENDED ROADWAY IMPROVEMENTS

The recommended number of through lanes in each direction is based upon an evaluation of the projected 2010 travel demand, along with the existing roadway characteristics and character of development in each segment. The results of the capacity analyses comparing the projected 2010 travel demand to the ultimate recommended roadway configurations for Palatine/Willow Road are given in *Table 2.2*.

Table 2.2
Summary of Arterial Corridor Capacity Analysis for Ultimate Improvement

Segment	Projected Travel Demand (AADT)[1]	Number of Through Traffic Lanes	Arterial Capacity (AADT)[1]	Peak Direction Level of Service	Adequate to Meet Projected Demand
Segment 1 U.S. Route 14 to Illinois Route 53	< 30,000	4 *	32,000 35,000	C D	Yes
Segment 2A Illinois Route 53 to Arlington Hghts Rd	> 50,000	4 [2]	30,000 32,000	C D	No
		6 [2]	46,000 49,000	C D	No
Segment 2B Arlington Hghts Rd to U.S. Route 12	30 to 40,000	4 [2]	19,000 22,000	C D	No
		6 [2]	29,000 34,000	C D	No
Segment 2C U.S. Route 12 to Illinois Route 21	40 to 50,000	4 [2]	33,000 35,000	C D	No
		6 [2]	47,000 50,000	C D	Yes

[1] Average Annual Daily Traffic
[2] Number of through lanes to be determined during Phase I Study of Alternatives

* Recommended number of through lanes for this segment.

Between U.S. Route 14 (Northwest Highway) and Illinois Route 53 it is recommended that the existing two through lanes in each direction be retained. The continuous 12-foot flush median should be extended westward from Williams Drive to U.S. Route 14 to improve safety and accommodate turning movements along this segment of Palatine/Willow Road.

Table 2.2 (continued)
Summary of Arterial Corridor Capacity Analysis for Ultimate Improvement

Segment	Projected Travel Demand (AADT)[1]	Number of Through Traffic Lanes	Arterial Capacity (AADT)[1]	Peak Direction Level of Service	Adequate to Meet Projected Demand
Segment 2D Illinois Route 21 to Interstate 294	> 50,000	4[2]	29,000 31,000	C D	No
		6[2]	45,000 48,000	C D	No
Segment 3A Interstate 294 to Landwehr Road	> 50,000	4	33,000 36,000	C D	No
		6 *	47,000 50,000	C D	Yes
Segment 3B Landwehr Road to Lehigh Avenue	> 50,000[3] 40 to 50,000[4]	4	32,000 34,000	C D	No
		6 *	48,000 51,000	C D	Yes
Segment 3C Lehigh Avenue to Illinois Route 43	40 to 50,000	4	25,000 27,000	C D	No
		6 *	37,000 41,000	C D	Yes
Segment 4 Illinois Route 43 to Interstate 94	> 50,000	4 *	30,000 32,000	C D	No
		6	46,000 49,000	C D	No

[1] Average Annual Daily Traffic
[2] Number of through lanes to be determined during Phase I Study of Alternatives
[3] Landwehr Road to Pfingsten Road
[4] Pfingsten Road to Lehigh Avenue

* Recommended number of through lanes for this segment.

Between Illinois Route 53 and Interstate 294 (Tri-State Tollway), two ultimate roadway configurations are recommended. The first alternative configuration involves retention of the existing four through lanes with one-way frontage roads and implementation of major intersection improvements at Kennicott Avenue, Arlington Heights Road, U.S. Route 12 (Rand Road), Windsor Drive, Schoenbeck Road, Wheeling Road, Sanders Road and Interstate 294. The second alternative configuration involves the elimination of the frontage road system and implementation of a continuous six-lane arterial with major improvements at the same intersections. Evaluation of both alternatives will be conducted during Phase I activities for the improvement. The existing right-of-way is adequate for either alternative with few exceptions.

The post-2010 recommended improvement between Illinois Route 53 and Interstate 294, subsequent to the ultimate improvement, is for the implementation of a 4 lane, grade separated and access-controlled facility. Grade separations would replace the at-grade intersections at Kennicott Avenue, Arlington Heights Road, U.S. Route 12, Windsor Drive, Schoenbeck Road, Wheeling Road and Sanders Road. Specific right-of-way requirements and associated design features for this facility would be determined during the design phase of the improvement. The results of the capacity analyses comparing the projected 2010 travel demand to the post-2010 recommended roadway confirguration between Illinois Route 53 and Interstate 294 are given in *Table 2.2A.*

The ultimate recommended roadway configuration between Interstate 294 (Tri-State Tollway) and Lehigh Avenue is six through lanes separated by a continuous raised median 18 feet in width. The ultimate recommended roadway configuration between Lehigh Avenue and Illinois Route 43 (Waukegan Road) is six through lanes separated by a continuous raised median 30 feet in width.

Between Illinois Route 43 (Waukegan Road) and Interstate 94 (Edens Expressway) the ultimate recommended roadway configuration is four through lanes plus a continous 12-foot wide flush median.

Specific roadway and right-of-way recommendations for each route segment are discussed with the respective segments in Section Three of this report.

After a thorough analysis of the timing required for the recommended improvements, the plans for the ultimate roadway improvements between Illinois Route 53 and Interstate 294 (Tri-State Tollway) and the ultimate recommended roadway improvements between Illinois Route 43 and Interstate 94 (Edens Expressway) have the greatest need for implementation. Low-cost improvements, such as the interconnection of traffic signals, could immediately benefit the flow of traffic. The remainder of recommended improvements to the route should be planned for implementation as projected increases in traffic occur.

2.6 TRANSIT

Existing transit service through or intersecting the Palatine/Willow Road study area includes Pace bus service and Metra rail commuter service. The following sections discuss existing service and

Table 2.2A
Summary of Arterial Corridor Capacity Analysis For Post-2010 Improvements

Segment	Projected Travel Demand (AADT)[1]	Number of Through Traffic Lanes	Arterial Capacity (AADT)[1]	Peak Direction Level of Service	Adequate to Meet Projected Demand
Segment 2A Illinois Route 53 to Arlington Hghts Rd	> 50,000	4[2]*	51,000 60,000	C D	Yes
Segment 2B Arlington Hghts Rd to U.S. Route 12	30 to 40,000	4[2]*	51,000 60,000	C D	Yes
Segment 2C U.S. Route 12 to Illinois Route 21	40 to 50,000	4[2]*	51,000 60,000	C D	Yes
Segment 2D Illinois Route 21 to Interstate 294	> 50,000	4[2]*	51,000 60,000	C D	Yes

[1] Average Annual Daily Traffic
[2] Four lane grade separated facility with full access control

* Recommended number of through lanes for this segment.

conditions, as well as the general type of recommended improvements for the overall route. Specific recommended improvements are discussed with their respective route segments in Section Three of this report.

2.6.1 BUS SERVICE

Pace is the primary bus service provider for the route. Northfield, Northbrook and Palatine have service, but the routes do not travel from one community to another. *Table 2.3* displays the characteristics of service within and across the route.

Routes 421 and 423 begin in Northfield and then connect the east end of the corridor to the Linden Avenue CTA rapid transit terminal. Route 421 passes by the Wilmette Metra Station and Route 423 passes by the Winnetka Metra Station.

Routes 212 and 270 travel through Northbrook. Route 212 serves the Northbrook Court Shopping Mall and the Evanston Davis Street CTA rapid transit and Metra Stations. Route 270 serves all locations between the Glenbrook Hospital and the Jefferson Park rapid transit

Table 2.3
Pace Route Characteristics

Route No.	Avg. Weekday Ridership 1989	1990	1991	Change (%)	Passengers /Rev. Hr.	Service Type*
210	n/a	n/a	1,055	n/a	19.9	
212	1,029	1,072	1,061	3.1	27.4	Inner
234	n/a	n/a	555	n/a	20.9	Out Sub
270	n/a	n/a	4,292	n/a	55.4	Inner
421	n/a	n/a	1,042	n/a	36.7	Out Sub
423	n/a	n/a	957	n/a	49.4	Inner
626	275	286	493	75.6	n/a	Feeder
690	407	414	403	(0.9)	23.2	Out Sub
698	n/a	n/a	58	n/a	n/a	Feeder
699	n/a	n/a	356	n/a	9.8	Out Sub
723	n/a	n/a	88	n/a	n/a	Feeder

* Inner = Inner Suburban (Suburban Cook and eastern DuPage Counties); Out Sub = Outer Suburban (Collar Counties and less dense areas of Suburban Cook); and Feeder = Feeder (Rush hour services to train stations.

Sources: Suburban Bus System Service Performance Report, Jan-Mar 1990, Pace 5/90
Quarterly Route Review: Jan-Mar, 1991, Pace 6/91

station. Mainly, it travels on Milwaukee Avenue, but a portion of its trip is on Palatine/Willow Road.

Route 699 serves the Palatine Metra Station traveling between Woodfield Mall and Rand Grove Village Shopping Center.

Other bus routes cross the corridor on other through roads. Route 210 provides rush hour service on Milwaukee Avenue from Wheeling and Lake Shore Drive to Downtown Chicago. Route 234 provides service between Wheeling and the Des Plaines Metra Station. Also, as a feeder, this route connects Wheeling to the Mount Prospect Metra Station. Route 626 is an express bus service along the Edens Expressway between Lake-Cook Road and the Skokie Swift CTA Station. Route 690 uses Arlington Heights Road to serve riders between Buffalo Grove and the Arlington Heights Metra Station. Route 698 acts as a feeder service between the Arlington Heights Metra Station and north Arlington Heights. Route 723 acts as a feeder between the Arlington Park Metra Station and northeastern Palatine.

2.6.2 RAIL SERVICE

Several Metra lines cross the Palatine/Willow corridor. The Chicago & NorthWestern Northwest Line runs parallel with U.S. Route 14 (Northwest Highway) through this area and stops in Palatine and Arlington Park west of the route. The Milwaukee North Line crosses

the route and stops at Northbrook and Glenview. The Glenview station is just south of the route. The Chicago & NorthWestern North Line stops at Winnetka east of the route.

Table 2.4 displays the characteristics of the commuter rail services to the route.

Table 2.4
Commuter Rail Service and Ridership

Line	Station	Entering Passengers Avg. Wk. Day	Parking Spaces	Parking Use
C&NW - North	Glencoe	841	416	409
	Hubbard Woods	480	110	53
	Winnetka	672	233	214
	Indian Hill	395	108	59
	Kenilworth	456	123	103
	Subtotal	2,844	990	838
Milwaukee - North	Glenview	1,512	709	627
	Northbrook	1,430	682	631
	Subtotal	2,942	1,391	1,58
C&NW - Northwest	Palatine	2,104	1,252	1,189
	Arlington Park	1,845	1,029	995
	Subtotal	3,949	2,281	2,184
	Total	**9,735**	**4,662**	**4,280**

Sources: Metra Station Passenger Counts, 1/5/90
Metra Parking Assessment, 10/10/91

2.6.3 RECOMMENDED TRANSIT IMPROVEMENTS

The following are the general types of recommended improvements for transit facilities. Specific recommended improvements for each segment of the Palatine/Willow Road route are discussed in Section Three with their respective route segments.

Bus Route Accommodation

Express and local bus services can be accommodated wherever frontage roads are available. Frontage roads should be used for local service and through lanes for express service.

Bus Stops

Locations for bus stops are recommended along the entire route consistent with provision of express bus service. For routes using the frontage roads or through lanes not served by

frontage roads, these locations are at signalized intersections with a one-quarter to one-half mile spacing. For routes using through lanes that are served by frontage roads, stops should be associated with existing or planned commercial and employment centers, Park-and-Ride facilities, and other transportation facilities. The recommended locations should provide for bus turnouts, consistent with Pace Development Guidelines, along with shelters and paved walks within the right-of-way.

Park-and-Ride Facility

Several locations for potential Park-and-Ride facilities have been identified along the route. These could be developed as multi-purpose facilities, supporting car and van pooling as well as transit service.

Transportation Center Facilities

The Transportation Center offers "pulse point" bus services to the rail lines, parking, drop-off points, taxi stands, and commuter related commercial space. Transportation centers tend to become more feasible at intersections of more than one transit type (e.g. the intersection of bus and commuter rail services), because the increased number of passengers provides more of a market for consumer goods and services. These are recommended at intersections with the planned Middle Circumferential corridor and the CTA Skokie Swift line extension.

Directional Signing

Consistent with the bus stop signage and Pace development guidelines, signage indicating the direction to rail facilities and off-route bus stops should be visible within the right-of-way. At the approaches to stations and stops, specific directional instructions for access drives to parking facilities, "kiss-and-ride" areas or drop-off points should be provided. For bus stops, informational signage should provide graphic illustrations of routes, with information on schedules and connecting routes.

Directional signage for the existing Metra stations in Palatine and Arlington Heights, and any future commuter rail facilities should be provided.

Transportation Management Associations

It is recommended that the existing transportation management associations (TMAs) in the region be supported and new groups be developed as needed. Transit needs do not always follow simple directional routes nor is their extent limited to village or county jurisdictional boundaries. The Northwest Municipal Conference has a transportation planning function., and communities and businesses in the Palatine/Willow Road corridor are members of the Lake-Cook TMA.

Pace Development Guidelines

Pace has published a set of development guidelines and established an official development review function. Guidelines include interior circulation to defined transit stops served with adequate facilities. It is recommended that communities experiencing development of major parcels along the SRA route encourage developers to meet as many of these guidelines as are appropriate to the community and to avail themselves of the review service.

2.7 SUMMARY OF PALATINE/WILLOW ROAD CONSTRUCTION COST ESTIMATES

A summary of the construction cost estimates for the recommended improvements to Palatine/ Willow Road is shown in *Table 2.5*. Cost estimates are shown in 1991 dollars.

Table 2.5
Construction Cost Estimates for Palatine/Willow Road

Improvement	Estimated Cost
Ultimate	
Roadway	$60,600,000
Intersection Improvements	$13,400,000
Traffic Signals	$100,000
Signal Interconnection	$300,000
Structure Improvements	$2,400,000
Transit Improvements (includes land acquisition)	$2,400,000
Right-of-way Acquisition	$820,000
Total Estimated Cost for Ultimate Improvements	**$80,020,000**
Post-2010	
Roadway (includes structures)	$200,000,000
Total Estimated Cost for Post-2010 Improvements	**$200,000,000**
Low-Cost	
Intersection Improvements	$300,000
Signal Interconnection	$500,000
Transit Improvements	$70,000
Total Estimated Cost for Low-Cost Improvements	**$870,000**
Total Estimated Cost for All Improvements	**$280,890,000**

SECTION THREE
ROUTE ANALYSIS

3.1 SRA SEGMENT 1: U.S. ROUTE 14 (NORTHWEST HIGHWAY) TO ILLINOIS ROUTE 53

3.1.1 LOCATION

Palatine/Willow Road Segment 1 extends from Route U.S. Route 14 (Northwest Highway) to Illinois Route 53, a distance of approximately 1.8 miles. (See *Figure 3.1.*)

3.1.2 EXISTING FACILITY CHARACTERISTICS

Existing facility characteristics for this segment are shown on Route Map A-1.

Traffic Volumes

Average Annual Daily Traffic (AADT) for Segment 1 is 39,800 vehicles according to the 1990 IDOT Cook County Traffic Map.

Right-of-Way

The right-of-way varies from 100 feet to 150 feet wide:

- Between U.S. Route 14 and Rohlwing Road it is 100 feet wide; and
- Between Rohlwing Road and Illinois Route 53 it is between 135 and 150 feet wide.

Pavement Width and Number of Lanes

There are four through lanes (two lanes in each direction) separated by double-yellow pavement markings or raised concrete medians. The paved roadway throughout the segment is 50 feet wide and includes curb-and-gutter.

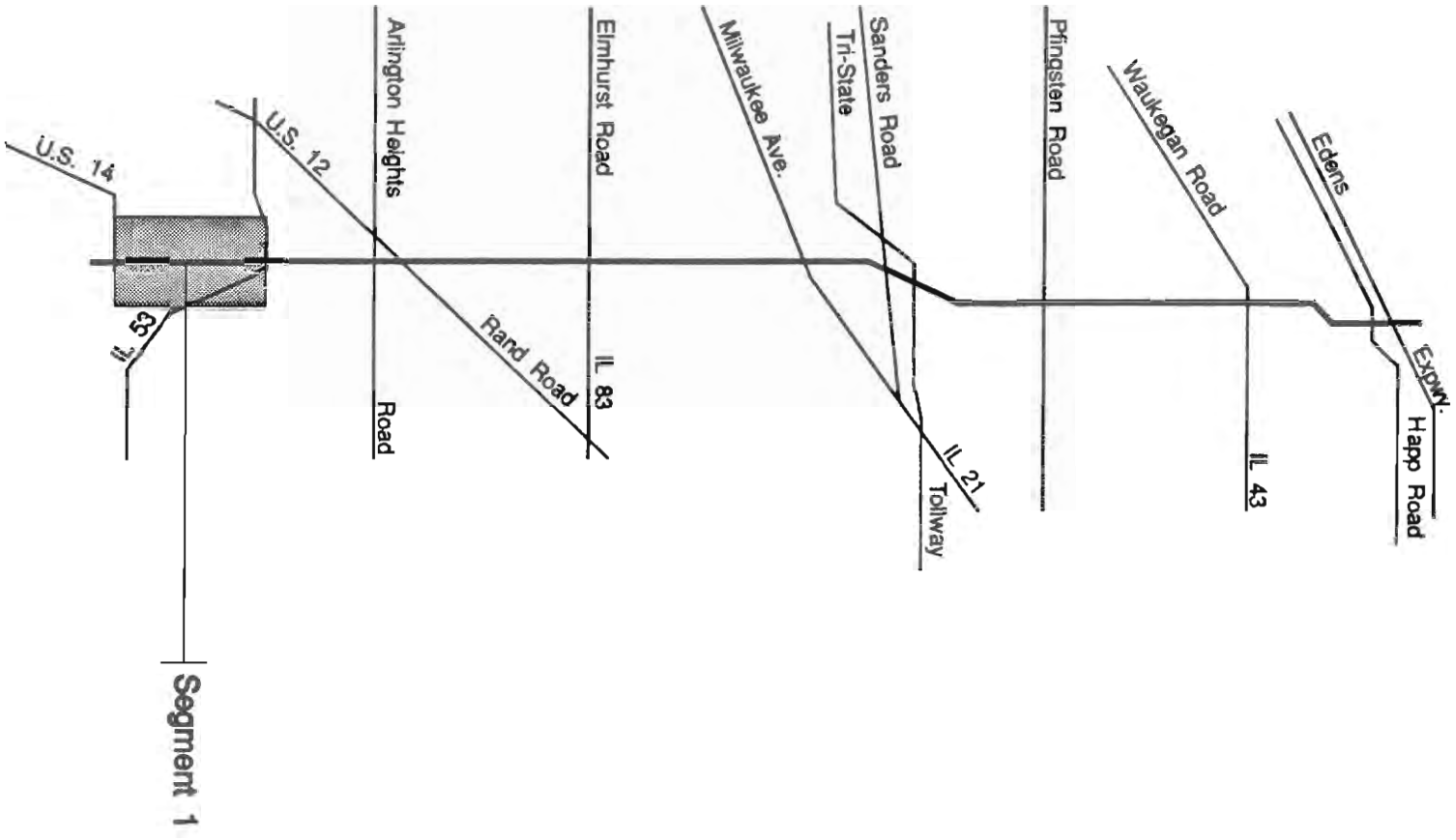
Traffic Signals

There are three signalized intersections between U.S. Route 14 (Northwest Highway) and Winston Drive. (See *Table 3.1.*)

Parking, Sidewalks, and Frontage Roads

There is no on-street parking.

There are sidewalks on both sides of the route. West of Williams Drive they are separated from the roadway by broad parkways. Between Williams Drive and Illinois Route 53 they are adjacent to the frontage roads.



Palatine/Willow Road
prepared by Harland Bartholomew & Associates, Inc.

Location Map
Figure 3.1

Table 3.1
Signalized Intersections

Intersection	No.of Through Lanes EB	WB	Turn Bays Left	Right	Remarks
U.S. Route 14	2	2	YES	NO	
Rohlwing Road	2	2	NO	NO	Westbound leading left turn
Winston Drive	2	2	YES	NO	
Note: EB=eastbound; WB=westbound					

Between Williams Drive and Illinois Route 53 there are frontage roads on both sides of Palatine/Willow Road.

Structures

There are two structures on the segment. They are listed on *Table 3.2*.

Table 3.2
Existing Structures

Structure	Structure No. (SN)	Location	Clearance Vert.	Horiz.	Remarks
IL Route 53	016-0373	———————	——	64.4'	SRA under
IL Route 53	016-0970	———————	——	68.0'	SRA under

Other Characteristics

There is a fully directional, cloverleaf interchange at Illinois Route 53.

3.1.3 EXISTING ENVIRONMENTAL CHARACTERISTICS

The environmental characteristics for Segment 1 include a floodplain and sensitive land uses. They are shown on Route Map B-1.

Streams/Wetlands/Floodplains

On this segment, there is a floodplain crossing west of Winston Drive. The Arlington Heights Branch of Salt Creek is approximately 100 feet wide at this location.

Sensitive Land Uses

Noise sensitive land uses on this segment include three churches and two schools. Two of the churches are opposite each other on the east corners of the intersection with Rohlwing Road, and the other is at the southeast corner of the intersection with Williams Drive. Both schools surround the church at the northeast corner of the intersection with Rohlwing Road.

Winston Park abuts the right-of-way on the north side of the route west of Winston Drive and includes the floodplain at this location.

3.1.4 DEVELOPMENT CHARACTERISTICS

The existing development characteristics and potential future development in the segment are shown on Route Map C-1.

Jurisdiction

The segment is entirely within the Village of Palatine.

Type and Intensity of Development

Development is predominantly single-family residential. There is one area of multi-family residential development on the south side of the route between Williams Drive and Winston Drive.

Commercial properties are clustered about the intersection with U.S. Route 14.

Development Access and Setback

From U.S. Route 14 to Williams Drive, much of the development is laid out in a grid pattern. Residences fronting Palatine/Willow Road and commercial properties fronting on U.S. Route 14 have driveway access. There are eight cross streets west of Williams Drive.

Between Williams Drive and Illinois Route 53, the frontage roads on either side of the route limit direct access. Access to and from the frontage roads is provided at Winston Drive.

Commercial development on the west end fronts on U.S. Route 14 and is set back approximately 15 to 20 feet from Palatine/Willow Road. The residences west of Williams Drive are set back approximately 30 feet from the right-of-way. From Williams Drive to Illinois Route 53, buildings nearest to the right-of-way are the residences on the north side which could be as close as 10 to 20 feet.

Future Development

Most land fronting Palatine/Willow Road is developed. According to municipal records as of August, 1990, there are no plans to develop any remaining vacant parcels. The residential areas appear stable and the commercial areas along U.S. Route 14 have been and can be expected to continue to undergo some redevelopment. The strip nature of these commercial properties would appear to preclude any substantial reconfiguration of this intersection.

3.1.5 RECOMMENDED IMPROVEMENTS

Improvements have been recommended after evaluating the projected travel demand for the year 2010 along with the existing roadway characteristics and character of development along the route. Improvements are categorized as ultimate and low-cost and divided into those related to the roadway, intersections, traffic signalization, structures, access management, transit and other improvements. Right-of-way requirements, potential environmental concerns and improvement cost estimates are also provided in this section. Recommended improvements are shown on Route Map D-1.

Ultimate Improvements

Roadway

The recommended roadway configuration between U.S. Route 14 (Northwest Highway) and Williams Drive provides for two through lanes in each direction with a 12-foot flush median. (See *Figure 3.2.*)

The recommended roadway configuration between Williams Drive and Illinois Route 53 is retention of the existing roadway cross-section of two through lanes in each direction plus frontage roads on both sides of Palatine/Willow Road (See *Figure 3.3.*)

Results of the capacity analysis for Segment 1 are shown in *Table 3.3.*

Table 3.3
Capacity Analysis for Segment 1 - Palatine/Willow Road

Segment	Projected Travel Demand (AADT)[1]	Number of Through Traffic Lanes	Arterial Capacity (AADT)[1]	Peak Direction Level of Service	Adequate to Meet Projected Demand
U.S. Route 14 to Illinois Route 53	< 30,000	4 *	32,000 35,000	C D	Yes

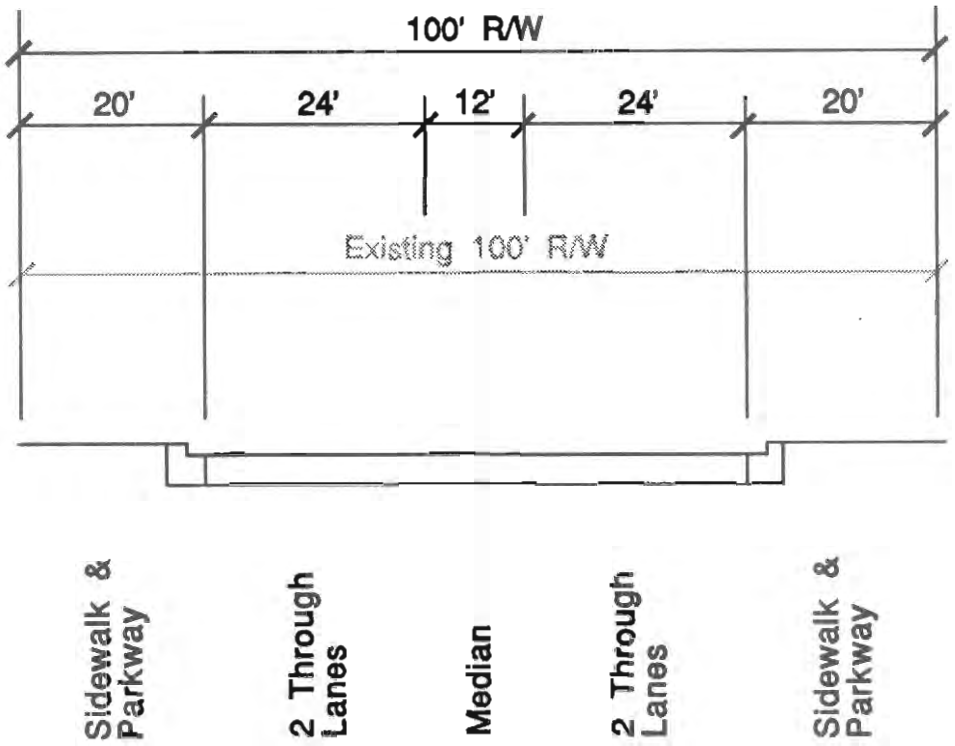
[1]Average Annual Daily Traffic

* - Indicates recommended number of through lanes for this segment.

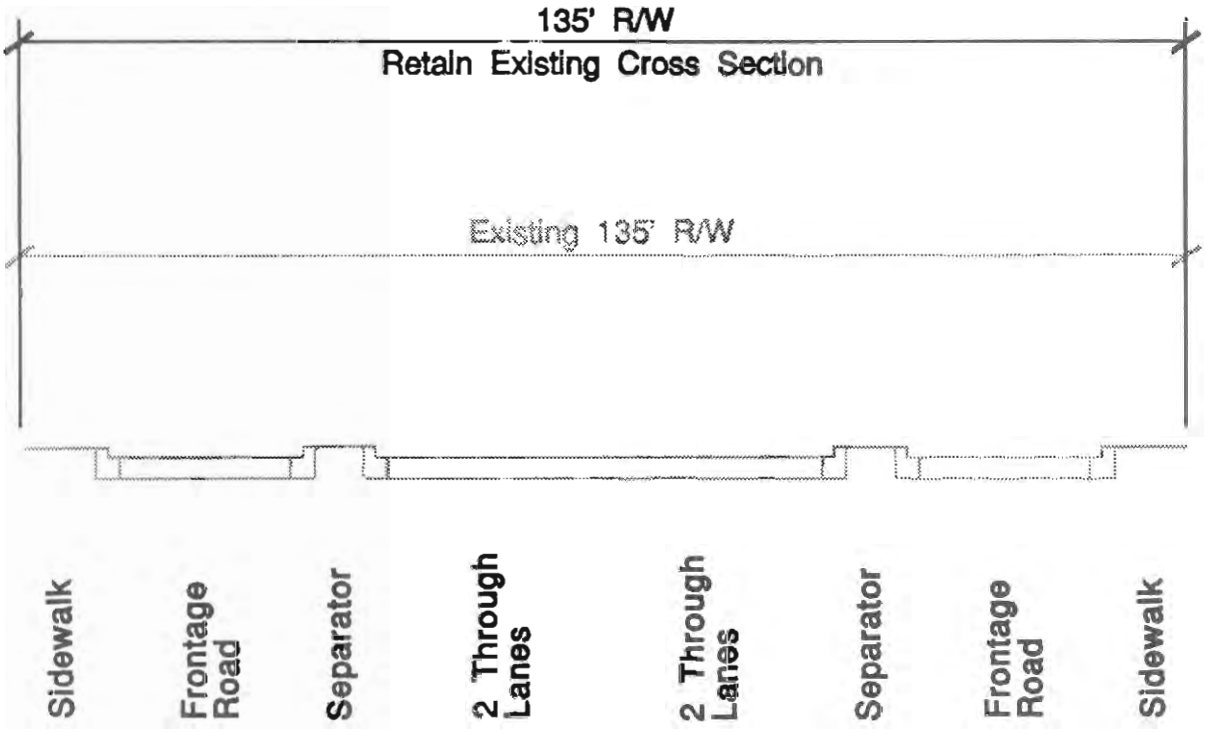
Intersections

The recommended roadway cross-section between U.S. Route 14 and Williams Drive will allow development of left-turn lanes at signalized and unsignalized intersections.

The recommended configuration for the Palatine/Willow Road-U.S. Route 14 intersection is shown in Detail 1. The level of service at the intersection with U.S. Route 14 was projected



Section A-A
Recommended Roadway Typical Section
U.S. Route 14 (Northwest Highway) to Williams Drive



Section B-B
Recommended Roadway Typical Section
Williams Drive to Illinois Route 53

Palatine/Willow Road
prepared by Harland Bartholomew & Associates, Inc.

Figure 3.3

using AADT volumes of 35,000 for Palatine/Willow Road and 33,000 for U.S. Route 14. The resulting projections for each intersection movement and for the total intersection are shown in *Table 3.4*.

Table 3.4
Palatine/Willow Road/U.S. Route 14 Intersection Level of Service

Direction	Movement	Level of Service
Palatine/Willow Road eastbound	left turn	C
Palatine/Willow Road eastbound	through and right turn	D
Palatine/Willow Road westbound	left turn	D
Palatine/Willow Road westbound	through	D
Palatine/Willow Road westbound	right turn	B
U.S. Route 14 northbound	left turn	D
U.S. Route 14 northbound	through	D
U.S. Route 14 northbound	right turn	B
U.S. Route 14 southbound	left turn	C
U.S. Route 14 southbound	through and right turn	C
Total Intersection		**D**

Traffic Signalization

No additional traffic signals are recommended in Segment 1; nor is it recommended that any existing traffic signals be removed.

Transit

A transportation center should be considered at the intersection with the Middle Circumferential commuter rail service line.

Low-Cost Improvements

Intersections

Left-turn channelization should be provided at Rohlwing Road as a low-cost improvement.

Traffic Signalization

Interconnection of the traffic signals at U.S. Route 14, Rohlwing Road and Winston Drive into a coordinated signal system is recommended.

Transit

The frontage roads should be used for bus service collecting passengers from the residential areas near the route. Bus stops for local and express services should be provided at U.S. Route 14 and near Illinois Route 53.

3.1.6 ADDITIONAL RIGHT-OF-WAY REQUIREMENTS

No additional right-of-way will be required for the implementation of the recommended roadway cross-section. Additional right-of-way will be needed for improvements to the U.S. Route 14 intersection.

3.1.7 POTENTIAL ENVIRONMENTAL CONCERNS

Any environmental concerns associated with the addition of a median between U.S. Route 14 (Northwest Highway) and Williams Drive should be addressed as part of the design phase for that improvement.

3.1.8 CONSTRUCTION/RIGHT-OF-WAY COST ESTIMATES

A summary of the construction and right-of-way cost estimates for the recommended improvements to Segment 1 of Palatine/Willow Road is shown in *Table 3.5*.

Table 3.5
Construction Cost Estimates for Segment 1 of Palatine/Willow Road

Improvement	Estimated Cost
Ultimate	
Roadway	$4,800,000
Intersection Improvements	$1,000,000
Transit Improvements (includes land acquisition)	$600,000
Right-of-way Acquisition	$20,000
Total Estimated Cost for Ultimate Improvements	**$6,420,000**
Low-Cost	
Intersection Improvements	$300,000
Signal Interconnection	$200,000
Transit Improvements	$10,000
Total Estimated Cost for Low-Cost Improvements	**$510,000**
Total Estimated Cost for All Improvements	**$6,930,000**

3.2 SRA SEGMENT 2: ILLINOIS ROUTE 53 TO INTERSTATE 294 (TRI-STATE TOLLWAY)

3.2.1 LOCATION

Segment 2 of Palatine/Willow Road extends from Illinois Route 53 to Interstate 294 (Tri-State Tollway), a distance of approximately 7.5 miles. (See *Figure 3.4.*)

3.2.2 EXISTING FACILITY CHARACTERISTICS

Existing facility characteristics are shown on Route Maps A-1, A-2 and A-3.

Segment 2 of Palatine/Willow Road is a junior expressway, combining elements associated with expressways such as interchanges and full access control with intersections and curb cuts associated with arterial streets. Interchanges are located at Illinois Route 53, Illinois Route 83 (Elmhurst Road), Wolf Road, Illinois Route 21 (Milwaukee Avenue) and Interstate 294 (Tri-State Tollway); and at-grade intersections on Palatine/Willow Road are located at Kennicott Avenue, Arlington Heights Road, U.S. Route 12 (Rand Road), Windsor Drive, Schoenbeck Road, Wheeling Road and Sanders Road.

Traffic Volumes

The Average Annual Daily Traffic (AADT) volume on Palatine/Willow Road between Illinois Route 53 and Arlington Heights Road is 39,300 vehicles, between Illinois Route 21 (Milwaukee Avenue) and Sanders Road it is 49,600 vehicles, and between Sanders Road and Interstate 294 (Tri-State Tollway) the AADT is 48,800 vehicles. These volumes were obtained from the 1990 IDOT Cook County Traffic Map.

Right-of-Way

Right-of-way was acquired to expand Palatine/Willow Road to a limited access facility and to accommodate interchanges at Illinois Route 53, and through the Arlington Heights Road and U.S. Route 12 intersections, creating right-of-way width variations as follows:

- 260 feet wide between Illinois Route 53 and Kennicott Avenue;
- 120 feet to 178 feet wide between Kennicott Avenue and Arlington Heights Road;
- 180 feet to 200 feet wide through the intersections with Arlington Heights Road and U.S. Route 12 (Rand Road);
- Narrowing from 200 feet wide at U.S. Route 12 (Rand Road) to 120 feet wide at the intersection with Windsor Drive; and
- 120 feet wide between Windsor Drive and McDonald Creek.

Location Map
Figure 3.4

Palatine/Willow Road
prepared by Harland Bartholomew & Associates, Inc.

East of McDonald Creek to Illinois Route 21, the right-of-way varies to accommodate the development which existed at the time the roadway was converted to a limited access facility. None of the right-of-way is less than 120 feet wide.

A connecting segment between Palatine Road and Willow Road was constructed as part of the interchange with Illinois Route 21. The former alignment of Palatine Road is now used; to access development north of the interchange, as the westbound on-ramp to the Palatine/ Willow Road through lanes and frontage roads, and as access to Illinois Route 21. This roadway is two-way from Illinois Route 21 through the development on the south side of the right-of-way and becomes one-way westbound thereafter.

The existing right-of-way is 99 feet wide between Illinois Route 21 (Milwaukee Avenue) and Sanders Road and 100 feet wide between Sanders Road and Interstate 294 (Tri-State Tollway).

Pavement Width and Number of Lanes

Between Illinois Route 53 and Arlington Heights Road there are four through lanes (two lanes in each direction) separated by a barrier median. The total paved roadway is about 50 feet wide, and there is curb-and-gutter.

Between Arlington Heights Road and Eastwood Drive there are six through lanes (three through lanes in each direction) separated by a 10- to 40-foot wide landscaped median. The paved roadway is approximately 72 feet wide and includes curb-and-gutter.

From Eastwood Drive to Sanders Road, the 40-foot wide roadway provides four through lanes (two through lanes in each direction) separated by a 2- to 4-foot wide barrier median or concrete barrier with curb and gutter along the outside edge of pavement.

East of Sanders Road, the pavement is 56 feet wide. This provides four through lanes (two in each direction), and a mountable median with curb and gutter at the outside edge of pavement. Through the Interstate 294 interchange, three through lanes are provided eastbound, and two are provided westbound.

Traffic Signals

There are nine signalized intersections. (See *Table 3.6.*) The triangular configuration formed when diagonal arterial U.S. Route 12 intersects the grid-patterned streets of Arlington Heights Road and Palatine/Willow Road is controlled as part of a triangular signal system along these roadways.

The signals at Windsor Drive, Schoenbeck Road and Wheeling Road accommodate traffic to and from the frontage roads in addition to traffic on Palatine/Willow Road and the cross street, so there is an added signal phase at these intersections for each frontage road. Turns are not allowed from the Palatine/Willow Road through lanes at these intersections.

Table 3.6
Signalized Intersections

Intersection	No.of Through Lanes		Turn Bays		Remarks
	EB	WB	Left	Right	
Kennicott Avenue	2	2	YES	NO	Jughandle frontage roads
Arlington Heights Road	3	3	YES	NO	Signal system
U.S. 12 (Rand Road)	3	3	YES	WB	Signal system
Windsor Drive	2	2	NO	NO	Frontage phase & turns
Schoenbeck Road	2	2	NO	NO	Frontage phase & turns
Wheeling Road	2	2	NO	NO	Frontage phase & turns
Sanders Road	2	2	YES	EB	
I-294 (west ramps)	3	2	WB	EB	dual-lefts westbound
I-294 (east ramps)	3	2	EB	WB	single left eastbound

Note: EB=eastbound; WB=westbound

The intersections from Sanders Road to Shermer Road, in Segment 3, are part of an existing interconnected signal system. Currently, only the portion from Sanders Road to Landwehr Road is optimized under an IDOT Signal Coordination and Timing System, while the other portion is planned to be added into the system in 1992.

Parking, Sidewalks, and Frontage Roads

There are no on-street parking spaces.

There are sidewalks near signalized intersections.

Except for the area between Arlington Heights Road and U.S. Route 12 and the area east of Illinois Route 21, there are one-way frontage roads along both sides of the roadway. Each frontage road has two lanes. These frontage roads are accessed by slip-ramps, driveways and curb cuts, and accommodate local traffic and turning vehicles.

The frontage roads are discontinuous at the Wisconsin Central Railroad crossing. A structure is provided over Palatine-Willow Road to link the frontage roads across Palatine/Willow Road. The frontage roads end at the west ramps to the Illinois Route 21 (Milwaukee Avenue) interchange.

The frontage roads merge with the interchange ramps and are signalized along the cross-streets with Elmhurst Road, Wolf Road and Illinois Route 21. Wolf Road and Illinois Route 21 are part of north-south signal systems.

Structures

There are ten structures in this segment. They are listed on *Table 3.7*.

Table 3.7
Existing Structures

Structure	Structure No. (SN)	Location	Clearance Vert.	Clearance Horiz.	Remarks
McDonald Creek	—	E. of US Route 12	N/A	—	SRA over
McDonald Creek	016-4006	W. of IL Route 83	N/A	90.3'	SRA over
Elmhurst Rd.	016-1031	———	N/A	54.6'	SRA over
Frontage Rd.	016-2530	W. of Soo Line	14'2"	31'	SRA under
Overpass	016-2025	Wisc. Central RR	14'2"	31'	SRA under
Frontage Rd.	016-2529	E. of Wisc. Central	14'2"	31'	SRA under
Wolf Road	016-0680	———	14'4"	43'	SRA under
DesPlaines River	016-0530	E. of Illinois 21	N/A	58'	SRA over
Pedestrian Ovpss	—	E. of Illinois 21	14' 4"	—	SRA under
Interstate 294	016-0531	———	—	58'	SRA over
Note: N/A=Not Applicable					

Other Characteristics

There are full diamond interchanges with Illinois Route 83 (Elmhurst Road), Wolf Road, Illinois Route 21 (Milwaukee Avenue) and Interstate 294 (Tri-State Tollway).

3.2.3 EXISTING ENVIRONMENTAL CHARACTERISTICS

The existing environmental characteristics for SRA Segment 2 of Palatine/Willow Road include wetlands, floodplains, a threatened species, and sensitive land uses. They are shown on Route Maps B-1, B-2 and B-3.

Streams/Wetlands/Floodplains

There are three floodplain crossings:

- the South Branch of McDonald Creek west of Windsor Drive is approximately 50 feet wide;
- McDonald Creek east of Schoenbeck Road is approximately 800 feet wide, and
- the Des Plaines River east of Illinois Route 21 is approximately 250 feet wide.

There are wetlands associated with the floodplains and at the southwest corner at Sanders Road.

Flora/Fauna

A habitat of Henslow's Sparrow, a threatened species, is within a mile of the right-of-way.

Sensitive Land Uses

Frontier Park is at the northeast corner of the intersection with Kennicott Avenue. A church, a Junior High School and Patriots Park are at the northeast and southwest corners of the intersection with Schoenbeck Road. There is a power station on the south side of the right-of-way between Illinois Route 83 and Wheeling Road and a day care center on the south side of the route just east of Sanders Road. Allison Woods Forest Preserve is between Illinois Route 21 (Milwaukee Avenue) and Sanders Road.

3.2.4 DEVELOPMENT CHARACTERISTICS

Existing development characteristics and potential future development are shown on Route Maps C-1, C-2, and C-3.

Jurisdiction

The local jurisdictions exercising control over development on this segment are the Villages of Arlington Heights, Prospect Heights and Wheeling. Palatine/Willow Road is bordered by:

- Arlington Heights between Illinois Route 53 and Schoenbeck Road on the north side, and Illinois Route 53 and Dale Avenue on the south side;
- Prospect Heights east of the Arlington Heights village limits extending on both sides to Glendale Drive, approximately one-tenth mile west of Wheeling Road, and again on the south side between Wolf Road and Illinois Route 21; and
- Wheeling between Glendale Drive and Wolf Road.

The area between Illinois Route 21 (Milwaukee Avenue) and Interstate 294 (Tri-State Tollway) is unincorporated. The Glenview and Northbrook planning areas cover the south and north side of the route, respectively

Type and Intensity of Development

Development includes commercial, residential, office and industrial land uses as well as the Palwaukee Airport. The airport is located on the north side of the route between Wolf Road and Illinois Route 21.

From Illinois Route 53 to Arlington Heights Road, land use is primarily single-family residential. There is also commercial development at the intersection with Arlington Heights Road and multi-family residential development on the south side of the route just west of Arlington Heights Road.

The intersections with Arlington Heights Road and U.S. Route 12 form a triangle of shopping centers. Single-family residential development begins just east of U.S. Route 12 and extends almost unbroken until midway between Illinois Route 83 and Wheeling Road. The exceptions are retail at Windsor Drive and at Illinois Route 83 (Elmhurst Road).

East of Wheeling Road, most land that is not part of the Palwaukee Airport has been developed into office and industrial parks. There is an apartment complex on the southeast corner of the intersection with Wheeling Road, and retail at the intersections with Wolf Road and Illinois Route 21.

There is a day care center and a commercial development on the southeast corner of Sanders Road and Palatine/Willow Road. The remainder of the development between Sanders Road and Interstate 294 (Tri-State Tollway) is office development.

Development Access and Setback

There is a barrier median through the entire segment. Between Arlington Heights Road and U.S. Route 12, few properties have direct access to the through lanes. The frontage roads provide direct or auxiliary access on this segment and are accessible at Kennicott Avenue, Arlington Heights Road, Windsor Drive, Schoenbeck Road, Illinois Route 83, Wheeling Road, Wolf Road and Illinois Route 21 or via slip ramps. Virtually all the newer single-family residential properties front on a local street which provides access via more than one street.

Setbacks are as follows.

- Between Illinois Route 53 and Arlington Heights Road, residential setbacks range from 15 to 20 feet. The commercial development at Arlington Heights Road is set behind the parking lots that abut the right-of-way.

- From Arlington Heights Road to Eastwood Drive, the buildings are set behind off-street parking lots which are separated from the roadway by a 20-foot landscaped parkway. The residential development is set back 20 to 30 feet.

- From Eastwood Drive to Windsor Drive, both residential and commercial development is set back at least 20 to 30 feet.

- Between Windsor Drive and Schoenbeck Road, residential development is buffered from the roadway by fencing or landscaping. These buffers are approximately 5 to 10 feet from the frontage road.

- East of Schoenbeck Road, setbacks are 15 to 20 feet. East of Wheeling Road, setbacks are 25 feet or more.

Office development is generally accessed via Wolf Road and Sanders Road. The commercial development and day care center by Sanders Road, however, can be accessed from Palatine/Willow Road as well. The commerical development is the only building not bet back substantially from the right-of-way.

Future Development

According to municipal records as of August, 1990, expansion of an existing office park on the northwest corner of Wolf Road constitutes the only plan for development. There are undeveloped parcels on the north side of the route from Schoenbeck Road to Illinois Route 83. The Prospect Heights Comprehensive Plan designates this land for open space and commercial development. A substantial amount of undeveloped land is also available near the Wisconsin Central Railroad. The Wheeling Comprehensive Plan designates this area for industrial development. Floodplains cover part of both areas.

3.2.5 RECOMMENDED IMPROVEMENTS

Improvements have been recommended after evaluating the projected travel demand for the year 2010 along with the existing roadway characteristics and character of development along the route. Improvements are categorized as ultimate, low-cost, and post-2010 and divided into those related to roadway, intersections, traffic signalization, structures, access management, transit and other improvements. Right-of-way requirements, potential environmental concerns and improvement cost estimates are also provided in this section. Ultimate recommended improvements are shown on Route Maps D-1, D-2 and D-3. Post-2010 recommended improvements are shown on Route Maps D-1A, D-2A and D-3A.

Ultimate Improvements

Roadway

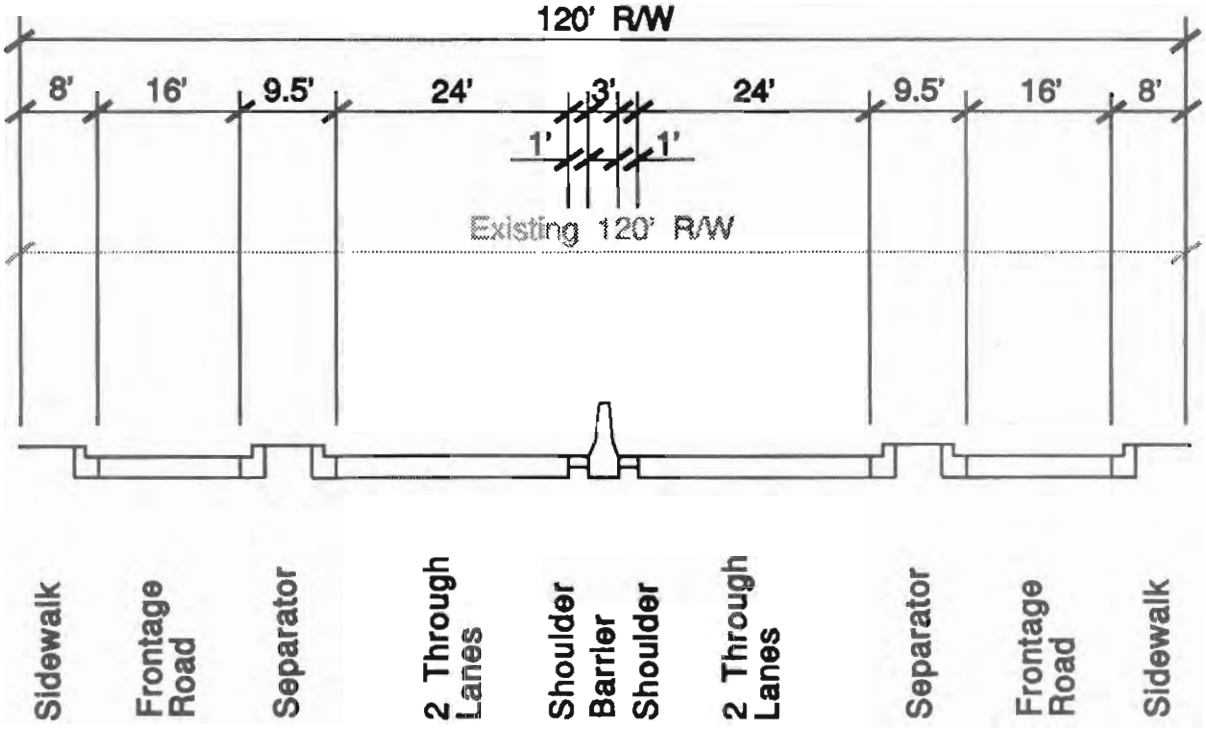
Two roadway cross-section alternatives are recommended for the ultimate improvement between Illinois Route 53 and Interstate 294:

- a four lane junior expressway facility as shown on *Figure 3.5,* and
- a six lane arterial facility as shown on *Figure 3.6.*

The first alternative consists of retention of the existing roadway configuration including the frontage road system plus implementation of major intersection improvements at all signalized intersections. Major intersection improvements include implementation of dual left-turn lanes and separate right-turn lanes at Arlington Heights Road, Windsor Drive, Schoenbeck Road, Wheeling Road, Sanders Road and Interstate 294. At Windsor Drive, Schoenbeck Road and Wheeling Road the construction of frontage road slip ramps is recommended to simplify operations at those intersections. (See Detail 2.)

The second alternative consists of elimination of the frontage road system and implementation of a six lane arterial. Major intersection improvements are identical to those described for the first alternative. (See Detail 3.)

The existing interchanges along Palatine/Willow, located at Illinois Route 83 (Elmhurst Road), Wolf Road and Illinois Route 21 (Milwaukee Avenue) will be retained with either alternative.

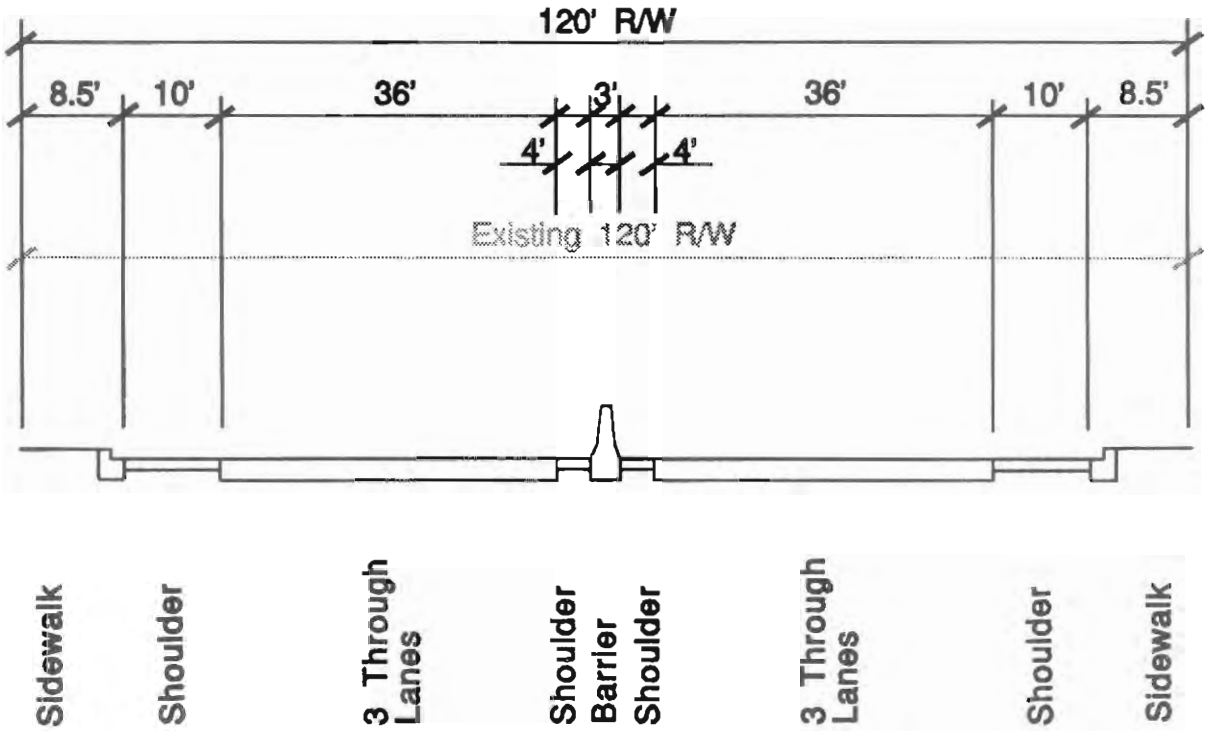


Section C-C
Ultimate Junior Expressway Alternative
Illinois Route 53 to
Interstate 294 (Tri-State Tollway)

Palatine/Willow Road

prepared by Harland Bartholomew & Associates, Inc.

Figure 3.5



Section C-C
Ultimate 6-Lane Arterial Alternative
Illinois Route 53 to
Interstate 294 (Tri-State Tollway)

Palatine/Willow Road

prepared by Harland Bartholomew & Associates, Inc.

Figure 3.6

Results of the capacity analysis for both ultimate roadway configurations are given in *Table 3.8*. Determination of the most appropriate ultimate roadway configuration alternative will be made during the detailed Phase I design study for this segment of Palatine/Willow Road which is scheduled to commence in 1992.

Table 3.8
Capacity Analysis for Segment 2 for Ultimate Improvement

Segment	Projected Travel Demand (AADT)[1]	Number of Through Traffic Lanes	Arterial Capacity (AADT)[1]	Peak Direction Level of Service	Adequate to Meet Projected Demand
Illinois Route 53 to Arlington Hghts Rd	> 50,000	4 [2]	30,000 32,000	C D	No
		6 [2]	46,000 49,000	C D	No
Arlington Hghts Rd to U.S. Route 12	30 to 40,000	4 [2]	19,000 22,000	C D	No
		6 [2]	29,000 34,000	C D	No
U.S. Route 12 to Illinois Route 21	40 to 50,000	4 [2]	33,000 35,000	C D	No
		6 [2]	47,000 50,000	C D	Yes
Illinois Route 21 to Interstate 294	> 50,000	4 [2]	29,000 31,000	C D	No
		6 [2]	45,000 48,000	C D	No

[1] Average Annual Daily Traffic
[2] Number of through lanes to be determined during Phase I Study of Alternatives

Intersections

It is recommended that dual left-turn lanes and separate right-turn lanes be implemented at the intersections with Arlington Heights Road and U.S. Route 12 (Rand Road), as shown on Detail 4. Dual left-turn lanes and separate right-turn lanes are also recommended at Windsor Drive, Schoenbeck Road, Wheeling Road, Sanders Road and Interstate 294. These improvements are recommended with either ultimate roadway configuration alternative.

The level of service for the intersection with U.S. Route 12 (Rand Road) was projected using AADT volumes of 34,000 for Palatine/Willow Road and 40,000 for U.S. Route 12 (Rand Road). The resulting projections for each intersection movement and for the total intersection are shown in *Table 3.9*.

Table 3.9
Palatine/Willow Road/U.S. Route 12 Intersection Level of Service

Direction	Movement	Level of Service
Palatine/Willow Road eastbound	left turn	D
Palatine/Willow Road eastbound	through	D
Palatine/Willow Road eastbound	right turn	B
Palatine/Willow Road westbound	left turn	D
Palatine/Willow Road westbound	through	C
Palatine/Willow Road westbound	right turn	B
U.S. Route 12 northbound	left turn	D
U.S. Route 12 northbound	through	D
U.S. Route 12 northbound	right turn	A
U.S. Route 12 southbound	left turn	D
U.S. Route 12 southbound	through and right turn	D
Total Intersection		**D**

At Interstate 294 (Tri-State Tollway), it is recommended that dual left-turn lanes be provided for eastbound Palatine/Willow traffic turning onto the northbound Interstate 294 (Tri-State Tollway) entrance ramp. It is also recommended that the northbound and southbound exit ramps at Interstate 294 (Tri-State Tollway) interchange be widened to include dual left- and dual right-turn lanes. The storage distances on the northbound and southbound exit ramps should be lengthened to provide adequate storage; a detailed traffic engineering study should be performed to determine the exact storage requirements.

Traffic Signalization

No new traffic signals are recommended in Segment 2 for either ultimate improvement alternative. It is not recommended that any existing signals be removed.

Access Management

The degree of access management varies significantly between the two ultimate improvement alternatives. The first alternative provides the greatest degree of access management since it retains much of the existing frontage road system. Existing access to the frontage roads would be maintained at most locations except near Windsor Drive, Schoenbeck Road and Wheeling Road. Some accesses adjacent to these intersections may need to be closed to provide adequate space for operations of the frontage road slip ramps as shown on Detail 2. Specific closures would be determined in the Phase I design of the improvement.

The removal of the frontage road system recommended under the six lane arterial alternative will give local streets and driveways direct access to the Palatine/Willow Road through lanes. The number of existing local streets or drives permitted direct access to the through lanes will be determined during Phase I design studies for the improvement. These access points would primarily be right-in/right-out type operation.

Full access to Palatine/Willow Road, for either alternative, should only be permitted at Kennicott Avenue, Arlington Heights Road, U.S. Route 12, Windsor Drive, Schoenbeck Road, Wheeling Road, Sanders Road and Interstate 294. The remaining access points should be right-in/right-out operation. The existing interchanges at Illinois Route 83 (Elmhurst Road), Wolf Road and Illinois Route 21 (Milwaukee Avenue) will be retained.

Structures

The extent of structural modifications for this segment is dependent on which ultimate improvement alternative is selected for construction. The first alternative requires the least amount of modification to existing structures as it maintains most of the existing roadway configuration. Due to the frontage road reconfiguration recommended at Windsor Drive, the McDonald Creek and South Branch of McDonald Creek structures may require modification.

All of the existing structures in Segment 2 will require modification for the six lane arterial alternative. In addition, the retaining walls associated with the grade separations at Illinois Route 83, Wolf Road and Illinois Route 21 will require reconstruction for the recommended roadway cross-section.

The Interstate 294 structure will require modification with either alternative in order to accommodate the recommended roadway and intersection improvements.

Other Improvements

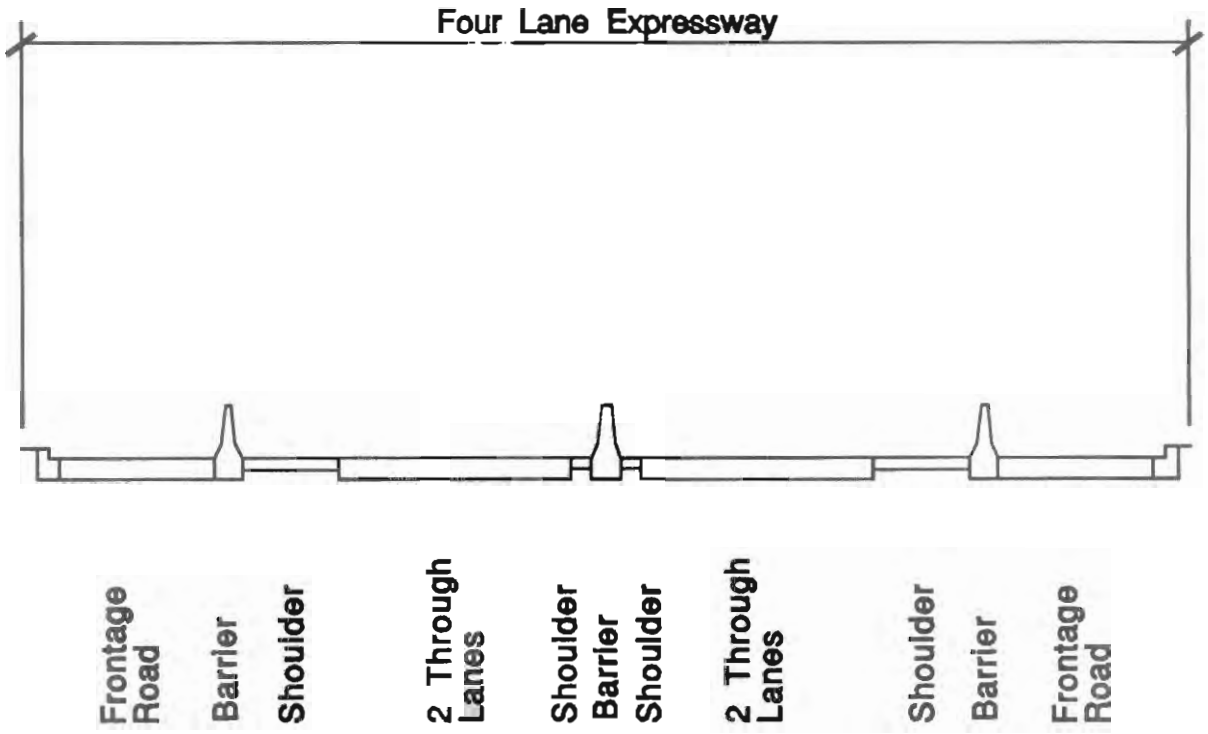
Consideration should be given to the construction of pedestrian grade separations at several locations in this segment. Typically, these facilities are located in areas of high pedestrian activity such as near parks, schools or shopping. Areas of potentially high pedestrian activity are:

- at Kennicott Avenue, close to Frontier Park and Patton School,
- at the Arlington Heights Road/Rand Road commercial areas, and
- at Schoenbeck Road, near MacArthur School, Ross School and Patriot Park.

Post-2010 Improvements

Roadway

The post-2010 recommended roadway configuration between Illinois Route 53 and Interstate 294 (Tri-State Tollway) is a four lane, grade separated and access controlled,



Section CC-CC
Post 2010 Four Lane Expressway
Illinois Route 53 to
Interstate 294 (Tri-State Tollway)

Palatine/Willow Road

prepared by Harland Bartholomew & Associates, Inc.

Figure 3.7

expressway facility. (See *Figure 3.7.*) Implementation of this expressway facility will require the construction of grade separations at Kennicott Avenue, Arlington Heights Road, U.S. Route 12 (Rand Road), Windsor Drive, Schoenbeck Road, Wheeling Road and Sanders Road in Segment 2. It is also recommended that a continuous, one-way frontage road system be established for the full length of this expressway facility. This will require construction of new frontage roads through the Arlington Heights Road and U.S. Route 12 (Rand Road) intersections, at-grade crossings for the frontage roads at the Wisconsin Central Railroad and new frontage roads between Illinois Route 21 (Milwaukee Avenue) and Interstate 294 (Tri-State Tollway). Specific right-of-way requirements, associated design issues and features and access requirements are among the issues which will be addressed during future studies.

Results of the capacity analysis for the post-2010 roadway configuration for Segment 2 are given in *Table 3.10.*

Table 3.10
Capacity Analysis for Segment 2 for Post-2010 Improvements

Segment	Projected Travel Demand (AADT)[1]	Number of Through Traffic Lanes	Arterial Capacity (AADT)[1]	Peak Direction Level of Service	Adequate to Meet Projected Demand
Illinois Route 53 to Arlington Hghts Rd	> 50,000	4[2]*	51,000 60,000	C D	Yes
Arlington Hghts Rd to U.S. Route 12	30 to 40,000	4[2]*	51,000 60,000	C D	Yes
U.S. Route 12 to Illinois Route 21	40 to 50,000	4[2]*	51,000 60,000	C D	Yes
Illinois Route 21 to Interstate 294	> 50,000	4[2]*	51,000 60,000	C D	Yes

[1] Average Annual Daily Traffic
[2] Four lane grade separated facility with full access control

* - Indicates recommended number of through lanes for this segment.

Traffic Signalization

The existing traffic signals for the Palatine/Willow mainline will be removed when the grade separations are constructed at Kennicott Avenue, Arlington Heights Road, U.S. Route 12 (Rand Road), Windsor Road, Schoenbeck Road and Wheeling Road. Signalization would be provided at the intersections of these cross streets with the frontage roads.

Access Management

Because the post-2010 roadway configuration recommendation is for an access controlled facility, all access whether for crossroads or private development will be to the recommended frontage road system. Appropriate locations for additional interchanges will be determined during future studies.

Structures

New structures would be implemented at Kennicott Avenue, Arlington Heights Road, U.S. Route 12 (Rand Road), Windsor Drive, Schoenbeck Road and Wheeling Road for the post-2010 roadway configuration. The structure at the South Branch of McDonald Creek (east of U.S. Route 12) will require modification to accommodate the recommended grade separation structure at Windsor Drive. The structure at McDonald Creek (SN 016-4006, west of Illinois Route 83) will require modification to accommodate the grade separation structure at Schoenbeck Road. The remaining existing structures may require modification to accommodate the post-2010 roadway cross-section.

Transit

When the commuter rail service is provided on the Wisconsin Central Rail line, a commuter station should be provided near Palatine/Willow Road.

Low-Cost Improvements

Transit

Bus stops should be provided for local service on the frontage roads and at appropriate intersections for express bus service.

3.2.6 ADDITIONAL RIGHT-OF-WAY REQUIREMENTS

The ultimate improvement alternatives recommended for this segment are intended to generally fit within the existing right-of-way. However, additional right-of-way may be necessary for intersection improvements or to make adjustments for variations in the profile. A more detailed determination of additional right-of-way will be undertaken in Phase I design study.

Additional right-of-way requirements for the post-2010 recommended improvement will be addressed entirely during future studies. A detailed analysis of the right-of-way necessary for the grade separations and continuous frontage roads will be made at that time.

3.2.7 POTENTIAL ENVIRONMENTAL CONCERNS

Concerns related to the habitat of the Henslow's Sparrow, Allison Woods Forest Preserve, floodplain and wetland encroachment, noise and visual impact are potential environmental concerns that should be addressed as part of the design phase of the ultimate and post-2010 recommended improvements.

3.2.8 CONSTRUCTION/RIGHT-OF-WAY COST ESTIMATES

A summary of the construction and right-of-way cost estimates for the recommended improvements to Segment 2 is shown in *Table 3.11*.

Table 3.11
Construction Cost Estimates for Segment 2 of Palatine/Willow Road

Improvement	Estimated Cost
Ultimate	
Roadway [1]	$34,000,000
Intersection Improvements	$9,000,000
Transit Improvements (includes land acquisition)	$600,000
Total Estimated Cost for Ultimate Improvements [1]	**$43,600,000**
Post-2010	
Roadway (includes structures)	$200,000,000
Total Estimated Cost for Post-2010 Improvements [2]	**$200,000,000**
Low-Cost	
Transit Improvements	$30,000
Total Estimated Cost for Low-Cost Improvements	**$30,000**
Total Estimated Cost for All Improvements	**$243,630,000**

[1] Does not include cost of modifying existing structures

[2] Does not include right-of-way acquisition

3.3 SRA SEGMENT 3: INTERSTATE 294 (TRI-STATE TOLLWAY) TO ILLINOIS ROUTE 43 (WAUKEGAN ROAD)

3.3.1 LOCATION

SRA Segment 3 of Palatine/Willow Road extends from Interstate 294 (Tri-State Tollway) to Illinois Route 43 (Waukegan Road), a distance of approximately 3.8 miles. (See *Figure 3.8.*)

3.3.2 EXISTING FACILITY CHARACTERISTICS

Existing facility characteristics for SRA Segment 3 of Palatine/Willow Road are shown on Route Maps A-3 and A-4.

Traffic Volumes

The Average Annual Daily Traffic (AADT) volumes range from 44,300 vehicles at Interstate 294 (Tri-State Tollway) to 25,500 vehicles at Illinois Route 43 (Waukegan Road). These volumes were obtained from the 1990 IDOT Cook County Traffic Map.

Right-of-Way

The right-of-way along most of this segment is 100 feet wide. However, from approximately one-quarter mile east of the Chicago & NorthWestern Railroad to the West Fork of the North Branch of the Chicago River, the right-of-way becomes as wide as 280 feet. The wider right-of-way accommodates frontage roads and a grade separation at the Railroad and a structure over the River.

Pavement Width and Number of Lanes

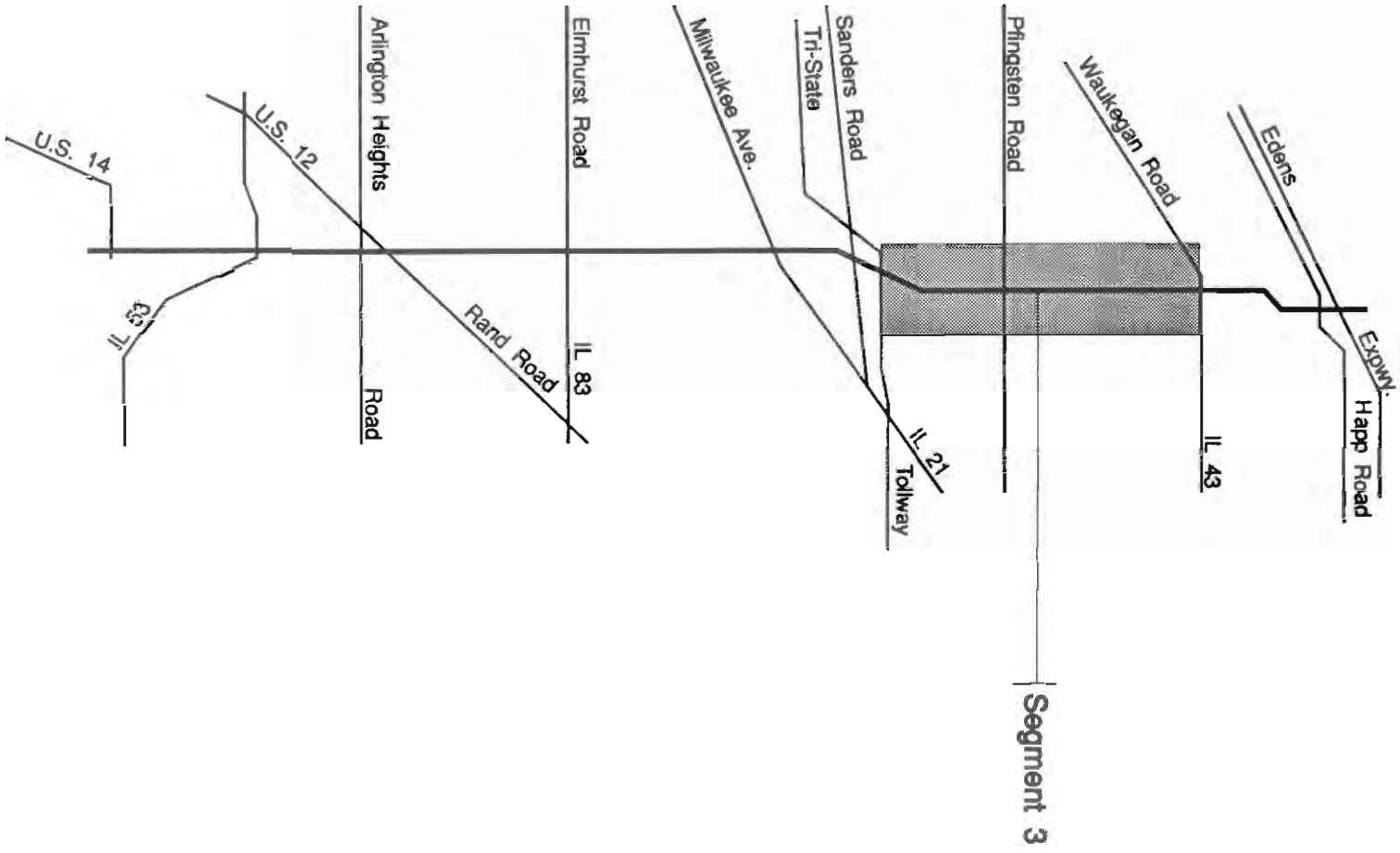
The existing roadway provides four through lanes (two lanes in each direction) separated by a 12- to 18-foot mountable median. The pavement is 56 feet wide, and there is curb-and-gutter throughout.

Traffic Signals

There are six signalized intersections which are listed in *Table 3.12*. The intersections from Sanders Road in Segment 2 to Shermer Road are part of an interconnected signal system. Currently, only the portion from Sanders Road to Landwehr Road is optimized under an IDOT Signal Coordination and Timing System. The system will be extended to Shermer Road during the 1991 IDOT Signal Coordination and Timing program.

Parking, Sidewalks, and Frontage Roads

There are no on-street parking spaces. There are sidewalks on the south side of the route between Landwehr Road and Shermer Road. There is a brief section of frontage roads which connect Lehigh Avenue to Palatine/Willow Road.



Palatine/Willow Road
prepared by Harland Bartholomew & Associates, Inc.

Location Map
Figure 3.8

Table 3.12
Signalized Intersections

Intersection	No.of Through Lanes EB	WB	Turn Bays Left	Right	Remarks
Landwehr Road	2	2	YES	NO	Existing signal Interconnect
Pfingsten Road	2	2	YES	NO	Existing signal Interconnect
Greenwood Avenue	2	2	YES	NO	Existing signal Interconnect
Shermer Road	2	2	YES	NO	Existing signal Interconnect
Old Willow Road	2	2	WB	NO	
Illinois Route 43	2	2	YES	NO	

Note: EB=eastbound; WB=westbound

Structures

There are three structures in Segment 3. (See *Table 3.13.*)

Table 3.13
Existing Structures

Structure	Structure No. (SN)	Location	Clearance Vert.	Horiz.	Remarks
C&NW RR	016-0532	E. of Shermer Rd	14'-0"	——	SRA under
CMSTP&P RR	016-0533	E. of Shermer Rd	——	64'	SRA over
W.Frk.N.Br.Ch.Riv	016-0534	W. of Illinois 43	N/A	64'	SRA over

Note: N/A=Not Applicable

3.3.3 EXISTING ENVIRONMENTAL CHARACTERISTICS

The existing environmental characteristics include a floodplain, a waste disposal and hazardous waste site, and sensitive land uses. They are shown on Route Maps B-3 and B-4.

Streams/Wetlands/Floodplains

There is one floodplain crossing west of Illinois Route 43 (Waukegan Road) where Palatine/ Willow Road crosses the West Fork North Branch Chicago River. The floodplain is approximately 2,000 feet wide at this crossing.

Waste Disposal Sites/Hazardous Waste Sites

There is a waste disposal and hazardous waste site reported on the north side of the route between the Chicago, Milwaukee, St. Paul & Pacific Railroad and the West Fork North Branch Chicago River.

Sensitive Land Uses

Noise sensitive land uses on this segment include a church, on the north side of the route just east of Pfingsten Road and a convent and church, at the southwest corner of the intersection with Illinois Route 43 (Waukegan Road).

3.3.4 DEVELOPMENT CHARACTERISTICS

The existing development characteristics and potential future development are shown on Route Map C-3 and C-4.

Jurisdiction

The local jurisdictions exercising control over development on this segment are the Villages of Glenview and Northbrook. The Village limits of Glenview are in an irregular pattern on both sides of the roadway from Interstate 294 to just east of Pfingsten Road. The bulk of the Village extends south from the route, but selected properties on the north side have been incorporated. Many of the properties abutting the right-of-way remain unincorporated.

The incorporated area of Northbrook is also not continuous along the right-of-way. The westernmost limit is east of Pfingsten Road. On the south side of the route the easternmost limit is at the Chicago & North Western Railroad, and on the north side of the route the easternmost limit is at Illinois Route 43 (Waukegan Road).

The planning areas of these two communities encompass the unincorporated areas of the route. A boundary agreement between them has delegated the responsibility for planning and development approval of each unincorporated property to one community or the other and established stringent requirements for access to Palatine/Willow Road.

Type and Intensity of Development

Land uses include residential, commercial and industrial developments. Glenview Naval Air Station is at the southwest corner of the intersection with Lehigh Avenue. From Landwehr Road to Shermer Road, the predominant land use is residential. The residential development from Landwehr Road to Pfingsten Road is single-family on large lots. There are several conventional residential subdivisions between Pfingsten Road and Shermer Road.

There is commercial development at the intersections with Pfingsten Road and Shermer Road. Between Shermer Road and Old Willow Road, development is mainly industrial.

The remainder of the segment is undeveloped except for the Convent of the Holy Spirit which is located on the southwest corner of Palatine/Willow Road and Illinois Route 43 (Waukegan Road).

Development Access and Setback

While much of this segment is developed, direct access to and from Palatine/Willow Road is limited. Homes between Landwehr Road and Pfingsten Road, and the commercial developments at Pfingsten Road and at Shermer Road are the only properties with driveway access. The other residential and industrial properties are accessed via collector streets which intersect the route.

With the possible exception of one building at the southwest corner of the intersection with Illinois Route 43, buildings are set back at least 20 feet. Some commercial development is separated from the right-of-way by off-street parking. Between Pfingsten Road and Shermer Road, residences are set back 20 to 30 feet and separated from the roadway by a fence or landscaped buffer located approximately 10 to 15 feet from the roadway.

Future Development

According to municipal records as of August, 1990, there are two plans for development. A shopping center is proposed for the northeast corner of the intersection with Pfingsten Road. There are also plans proposed for a 172 acre office complex on the southwest corner of the intersection with Illinois Route 43 (Waukegan Road).

There are two large parcels of undeveloped land remaining. One large parcel is bounded by Interstate 294 (Tri-State Tollway) and Landwehr Road. The Comprehensive Plans of both Glenview and Northbrook designate this area for single-family residential development. Another large undeveloped parcel at the northwest corner of the intersection with Illinois Route 43 (Waukegan Road) and is planned for office development. It is commonly known as the Techny development. While development of both parcels is not likely to occur until demand for new residential and office space improves, both are expected to develop in the near term.

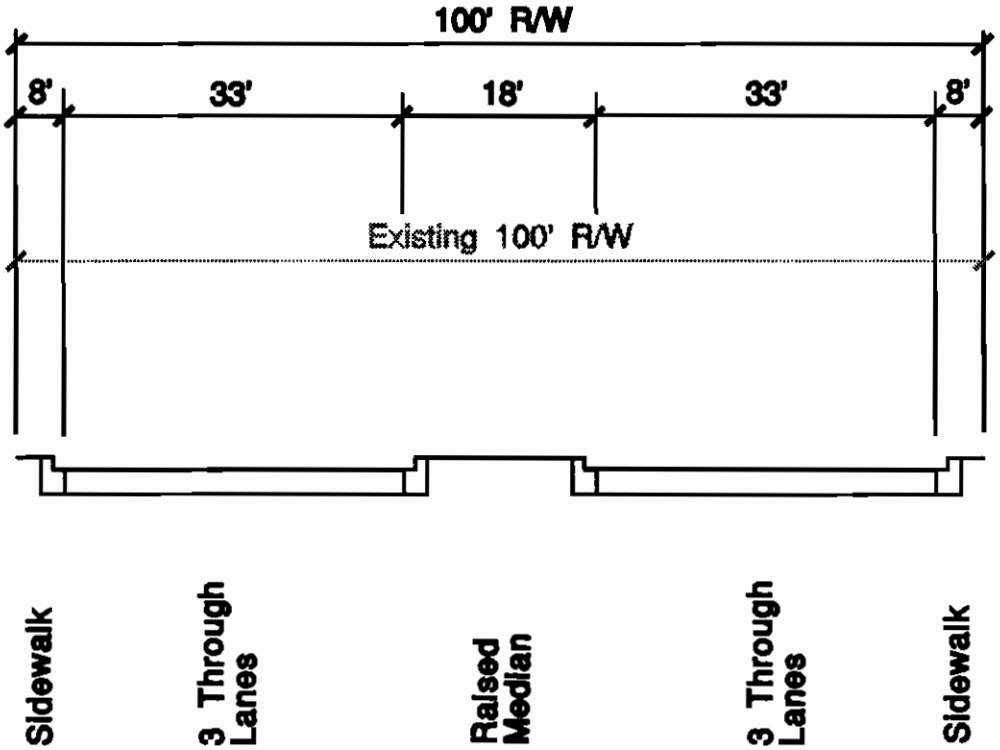
3.3.5 RECOMMENDED IMPROVEMENTS

Improvements have been recommended after evaluating the projected travel demand for the year 2010 along with the existing roadway characteristics and character of development along the route. All improvements are categorized as ultimate and low-cost and are divided into those related to the roadway, intersections, traffic signalization, structures, access management, transit and other improvements. Right-of-way requirements, potential environmental concerns and improvement cost estimates are also provided in this section. Recommended improvements are shown on Route Map D-3 and D-4.

Ultimate Improvements

Roadway

The ultimate recommended roadway configuration between Interstate 294 (Tri-State Tollway) and Lehigh Avenue is three through lanes in each direction plus an 18-foot raised median within the existing 100-foot right-of-way. (See *Figure 3.9.*)



Section D-D
Recommended Roadway Typical Section
Interstate 294 (Tri-State Tollway) to Lehigh Avenue

Palatine/Willow Road

prepared by Harland Bartholomew & Associates, Inc.

Figure 3.9

The ultimate recommended roadway configuration between Lehigh Avenue and Illinois Route 43 (Waukegan Road) is three through lanes in each direction separated by a 30-foot raised median within an ultimate desirable right-of-way width of 150 feet. (See *Figure 3.10.*)

Results of the capacity analysis for Segment 3 are given in *Table 3.14.*

Table 3.14
Capacity Analysis for Segment 3 - Palatine/Willow Road

Segment	Projected Travel Demand (AADT)[1]	Number of Through Traffic Lanes	Arterial Capacity (AADT)[1]	Peak Direction Level of Service	Adequate to Meet Projected Demand
Interstate 294 to Landwehr Road	> 50,000	4	33,000 36,000	C D	No
		6 *	47,000 50,000	C D	Yes
Landwehr Road to Lehigh Avenue	> 50,000[2] 40 to 50,000[3]	4	32,000 34,000	C D	No
		6 *	48,000 51,000	C D	Yes
Lehigh Avenue to Illinois Route 43	40 to 50,000	4	25,000 27,000	C D	No
		6 *	37,000 41,000	C D	Yes

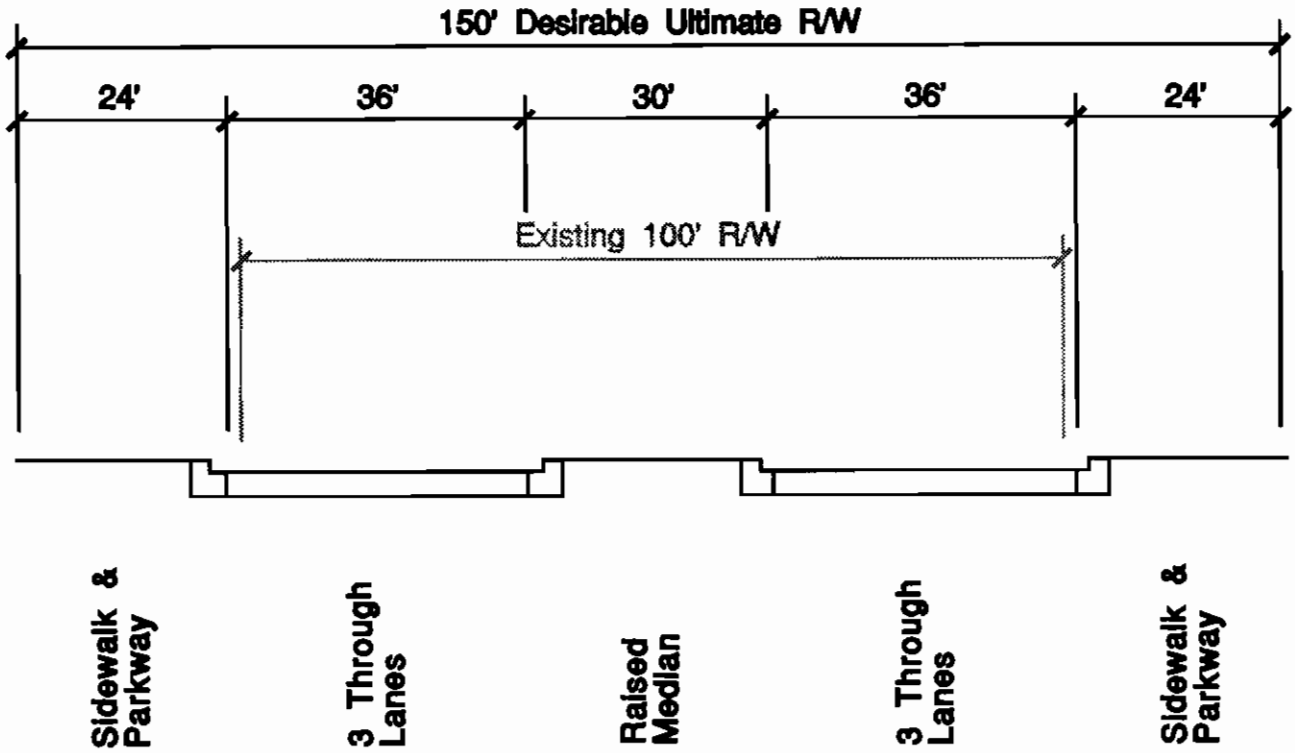
[1] Average Annual Daily Traffic
[2] Landwehr Road to Pfingsten Road
[3] Pfingsten Road to Lehigh Avenue

* - Indicates recommended number of through lanes for this segment.

Intersections

It is recommended that dual left-turn lanes be constructed on all legs of the intersection with Illinois Route 43 (Waukegan Road), as shown on Detail 5. Separate right-turn lanes are recommended on the north, south and west approaches.

The level of service for each intersection movement and for the total intersection was projected for the intersection with Illinois Route 43 (Waukegan Road). AADT volumes of



Section E-E
Recommended Roadway Typical Section
Lehigh Avenue to
Illinois Route 43 (Waukegan Road)

45,000 for Palatine/Willow Road and 40,000 for Illinois Route 43 were used. The projections are shown in *Table 3.15*.

Table 3.15
Palatine/Willow Road/Illinois Route 43 Intersection Level of Service

Direction	Movement	Level of Service
Palatine/Willow Road eastbound	left turn	D
Palatine/Willow Road eastbound	through	B
Palatine/Willow Road eastbound	right turn	A
Palatine/Willow Road westbound	left turn	D
Palatine/Willow Road westbound	through and right turn	D
Illinois Route 43 northbound	left turn	D
Illinois Route 43 northbound	through	D
Illinois Route 43 northbound	right turn	B
Illinois Route 43 southbound	left turn	D
Illinois Route 43 southbound	through	C
Illinois Route 43 southbound	right turn	B
Total Intersection		**D**

Traffic Signalization

A potential future traffic signal is recommended at a potential future mid-mile collector between Old Willow Road and Illinois Route 43 (Waukegan Road). This signal should be installed only when signal warrants for SRA routes are met. (Recommended signal warrants for SRAs are discussed in Section 10.4.2 of the Strategic Regional Arterial Design Concept Report.) Additional signals are not recommended because they would tend to impede traffic flow and interfere with optimization and progression of signal systems.

It is not recommended that any existing traffic signals be removed.

Extension of the existing signal interconnect from Northfield Road in Segment 4 to Old Willow Road is recommended in order to interconnect the existing signal at Old Willow Road, the proposed signal at the mid-mile collector and the existing signal at Illinois Route 43 (Waukegan Road) into a coordinated signal system.

Access Management

Full access to Palatine/Willow Road should only be permitted at the signalized intersections. All unsignalized intersections and local drives should operate as right-in/right-out only.

As parcels are developed or redeveloped, it is recommended that access to Palatine/Willow Road be limited to the locations shown on Route Maps D-3 and D-4.

Structures

The structures at the Chicago and NorthWestern Railroad (SN 016-0532), Chicago Milwaukee St. Paul & Pacific Railroad (SN 016-0533) and the West Fork of the North Branch of the Chicago River (SN 016-0534) will require modification to accommodate the recommended six through lane roadway cross-section.

Transit

Right-of-way should be protected for future Park-and-Ride facilities at or near the intersections with Landwehr Road and Illinois Route 43 (Waukegan Road). The Village of Glenview is exploring the possibility of improving facilities at its Milwaukee North Line Metra station south of the route. Development of a Park-and-Ride lot and limited retail facilities serving commuters is a possibility as part of this improvement. Alternatively, a transportation center could be developed as part of the Techny property.

Low-Cost Improvements

Transit

Bus stops should be provided at appropriate intersections for express bus service along the route.

3.3.6 ADDITIONAL RIGHT-OF-WAY REQUIREMENTS

To achieve the 150-foot desirable ultimate right-of-way width between Lehigh Avenue and Illinois Route 43 (Waukegan Road) a 25-foot strip should be protected on each side of Palatine/Willow Road.

3.3.7 POTENTIAL ENVIRONMENTAL CONCERNS

The impact of expanding the right-of-way into the floodplain of the West Fork of the North Branch of the Chicago River should be evaluated during the design phases of the proposed improvements. The waste disposal and hazardous waste site west of the floodplain may also be impacted and should be studied.

Additional right-of-way expansion and intersection improvements at the intersection with Illinois Route 43 (Waukegan Road) may impact the convent and church at the southwest corner. The potential for accommodating these structures should be explored as part of the design of any improvements.

3.3.8 CONSTRUCTION/RIGHT-OF-WAY COST ESTIMATES

A summary of the construction and right-of-way cost estimates for the recommended improvements to Segment 3 of Palatine/Willow Road is shown in *Table 3.16.*

Table 3.16 Construction Cost Estimates for Segment 3 of Palatine/Willow Road	
Improvement	**Estimated Cost**
Ultimate	
Roadway	$16,200,000
Intersection Improvements	$3,400,000
Traffic Signal	$100,000
Signal Interconnection	$300,000
Structure Improvements	$2,300,000
Transit Improvements (includes land acquisition)	$600,000
Right-of-way Acquisition	$800,000
Total Estimated Cost for Ultimate Improvements	**$23,700,000**
Low-Cost	
Transit Improvements	$20,000
Total Estimated Cost for Low-Cost Improvements	**$20,000**
Total Estimated Cost for All Improvements	**$23,720,000**

3.4 SRA SEGMENT 4: ILLINOIS ROUTE 43 (WAUKEGAN ROAD) TO INTERSTATE 94 (EDENS EXPRESSWAY)

3.4.1 LOCATION

SRA Segment 4 extends from SRA Route Illinois Route 43 (Waukegan Road) to Interstate 94 (Edens Expressway), a distance of approximately 1.9 miles. (See *Figure 3.11.*)

3.4.2 EXISTING FACILITY CHARACTERISTICS

Existing facility characteristics are shown on Route Map A-4.

Traffic Volumes

The Average Annual Daily Traffic (AADT) volumes are 27,000 between Illinois Route 43 and Sunset Ridge Road; 28,100 between Sunset Ridge Road and Northfield Road; and 27,900 between Northfield Road and Interstate 94 (Edens Expressway). These volumes were obtained from the 1990 IDOT Cook County Traffic Map.

Right-of-Way

The right-of-way for the entire length of this route segment is 100 feet wide.

Pavement Width and Number of Lanes

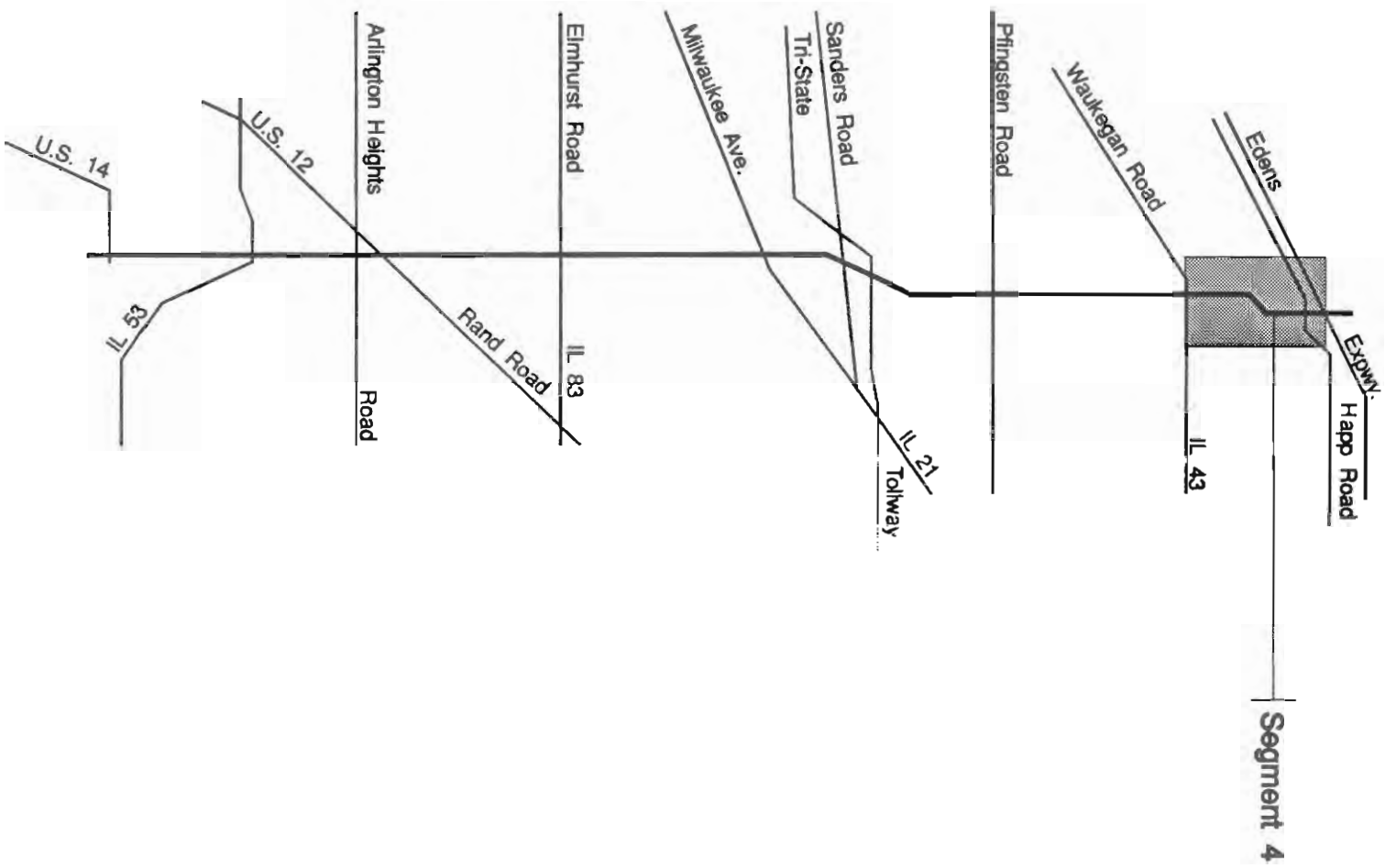
The roadway configuration between Illinois Route 43 (Waukegan Road) and Northfield Road provides two through lanes (one lane in each direction). The paved roadway width is 22 feet and is bordered by 4- to 8-foot wide gravel shoulders. From Northfield Road to Interstate 94, there are four through lanes (two lanes in each direction) separated by a 6- to 12-foot wide barrier median. The paved roadway dedicated to through lanes varies between 40 and 48 feet wide. The 40-foot wide roadway is between Northfield Road and Central/Happ Road, and the 48-foot wide roadway extends from Central/Happ Road to the end of the route segment. There is curb-and-gutter along the four lane roadway section.

Traffic Signals

There are five signalized intersections. (See *Table 3.17.*) The signalized intersections at Northfield Road and Central/Happ Road form an east-west interconnected signal system.

Parking, Sidewalks, and Frontage Roads

There are no on-street parking spaces or frontage roads. There is a sidewalk along the entire segment east of Sunset Ridge Road on the south side of Palatine/Willow Road.



Palatine/Willow Road

prepared by Harland Bartholomew & Associates, Inc.

Location Map

Figure 3.11

Table 3.17
Signalized Intersections

Intersection	No. of Through Lanes		Turn Bays		Remarks
	EB	WB	Left	Right	
Kraft Entrance	2	2	EB	WB	
Sunset Ridge Road	1	1	YES	NO	
Wagner Road	1	1	YES	NO	
Northfield Road	2	2	YES	NO	Existing signal system
Central/Happ Road	2	2	YES	NO	Existing signal system
Note: EB=eastbound; WB=westbound					

Structures

There are two structures in this segment. They are listed in *Table 3.18.*

Table 3.18
Existing Structures

Structure	Structure No. (SN)	Location	Clearance		Remarks
			Vert.	Horiz.	
M.Frk.N.Br.Ch.Riv	016-0535	W. of Nrthfield Rd	N/A	48'	SRA over
Interstate 94	016-0536	————	——	54.8'	SRA over
Note: N/A=Not Applicable					

Transit

Pace transit services use Old Willow Road between Sunset Ridge Road and Northfield Road.

Other Characteristics

There is an unsignalized interchange which provides access to southbound Interstate 94 (Edens Expressway) and from northbound Interstate 94. No access is provided to Palatine/ Willow Road from southbound or to northbound Interstate 94.

There is an at-grade rail crossing for the Chicago & NorthWestern Railroad between Northfield Road and Central/Happ Road.

3.4.3 EXISTING ENVIRONMENTAL CHARACTERISTICS

The existing environmental characteristics for SRA Segment 4 of Palatine/Willow Road include wetlands, floodplains and sensitive land uses, and are shown on Route Map B-4.

Streams/Wetlands/Floodplains

There are two floodplain crossings. East of Wagner Road, floodplain of the Middle Fork of the North Branch of the Chicago River is approximately 900 feet wide. The Skokie River floodplain is east of the Interstate 94 interchange.

There are wetlands between Waukegan Road and Sunset Ridge Road on both sides of the route.

Sensitive Land Uses

Noise sensitive land uses on this segment include two churches, two schools, and a public library. One of the churches and a school are at the southwest and northeast corners of the Sunset Ridge Road intersection, respectively. The other church and school are at the northwest and northeast corners of the Wagner Road intersection. The public library is at the southwest corner of the intersection with Happ Road.

Other public uses include:

- Willow Park east of Wagner Road,
- Clarkson Park south of Willow Park on the south side of the route,
- A post office south of the library, and
- the Northfield fire and police station and municipal building at the southeast corner of the intersection with Happ Road.

3.4.4 DEVELOPMENT CHARACTERISTICS

The existing development characteristics and potential future development for SRA Segment 4 of Palatine/Willow Road are indicated on Route Map C-4.

Jurisdiction

The segment is entirely within the Village of Northfield.

Type and Intensity of Development

Development is predominantly single-family residential, but there is also a limited amount of commercial development at Sunset Ridge Road and at Northfield Road. There is some office development northwest of the interchange with Interstate 94.

Development Access and Setback

While there are some residential driveways that intersect Palatine/Willow Road, the majority of residences are accessed by collector streets which intersect the route. Commercial

development has curb cut access. The office development east of Northfield Road is accessed from Central Road.

While the road tapers to two lanes on this segment, development is set back significantly. Most residences are set back 30 to 40 feet from the right-of-way. Commercial development at Northfield Road is set back approximately 25 feet. East of Northfield Road, commercial development is set behind off-street parking. Other development east of Northfield Road is set back approximately 30 feet.

Future Development

An office campus is under construction on the northeast corner of Palatine/Willow Road and Illinois Route 43. Most of the remaining undeveloped land is between Illinois Route 43 (Waukegan Road) and Sunset Ridge Road on the south side of the route. Although this land is zoned for residential development, the Northfield Comprehensive Plan designates this area for office and research development.

3.4.5 RECOMMENDED IMPROVEMENTS

Improvements have been recommended after evaluating the projected travel demand for the year 2010 along with the existing roadway characteristics and character of development along the route. All improvements are categorized as ultimate and low-cost and are divided into those related to the roadway, intersections, traffic signalization, structures, access management, transit and other improvements. Right-of-way requirements, potential environmental concerns and improvement cost estimates are also provided in this section. Recommended improvements are shown on Route Map D-4.

Ultimate Improvements

Roadway

The recommended roadway configuration is two through lanes in each direction divided by a 12-foot flush median within the existing right-of-way. (See *Figure 3.12.*)

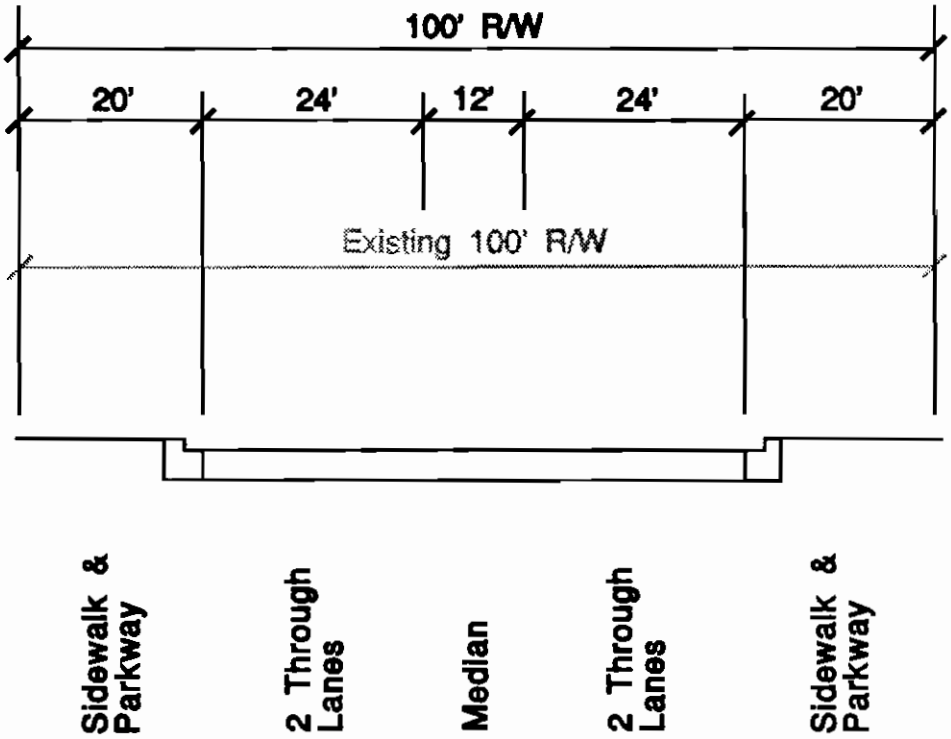
Results of the capacity analysis are shown in *Table 3.19.*

Intersections

A continuous 12-foot median will allow proper development of left-turn lanes at all intersections.

Traffic Signalization

It is recommended that no additional traffic signals be implemented and that all existing signals be retained.



Section F-F
Recommended Roadway Typical Section
Illinois Route 43 (Waukegan Road)
to Interstate 94 (Edens Expressway)

Palatine/Willow Road

prepared by Harland Bartholomew & Associates, Inc.

Figure 3.12

Table 3.19
Capacity Analysis for Segment 4 - Palatine/Willow Road

Segment	Projected Travel Demand (AADT)[1]	Number of Through Traffic Lanes	Arterial Capacity (AADT)[1]	Peak Direction Level of Service	Adequate to Meet Projected Demand
Illinois Route 43 to Interstate 94	> 50,000	4 *	30,000 32,000	C D	No
		6	46,000 49,000	C D	No

[1]Average Annual Daily Traffic

* - Indicates recommended number of through lanes for this segment.

Structures

The structure over the Main Fork of North Branch of the Chicago River (SN 016-0535) will require modification to accommodate the recommended four through lane roadway cross-section.

Transit

A transportation center at the intersection with the CTA Skokie Swift line should be provided when the line is extended.

Low-Cost Improvements

Traffic Signalization

It is recommended that all of the existing traffic signals in this segment be interconnected by extending the existing signal interconnect from Northfield Road to Illinois Route 43.

Access Management

As parcels are developed or redeveloped, it is recommended that access to Palatine/Willow Road be limited to the locations shown on Route Map D-4.

Transit

Bus stops should be provided at appropriate intersections for express bus service along the route.

3.4.6 ADDITIONAL RIGHT-OF-WAY REQUIREMENTS

No additional right-of-way is required in Segment 4.

3.4.7 POTENTIAL ENVIRONMENTAL CONCERNS

Environmental concerns associated with encroachment of additional lanes on the floodplain of the middle fork of the North Branch of the Chicago River should be evaluated during the design phase of the recommended improvements. Any potential increases in air or noise pollution adjacent to schools, churches and parks should be evaluated during more detailed studies of the improvement.

3.4.8 CONSTRUCTION/RIGHT-OF-WAY COST ESTIMATES

A summary of the construction and right-of-way cost estimates for the recommended improvements to Segment 4 of Palatine/Willow Road is shown in *Table 3.20*.

Table 3.20
Construction Cost Estimates for Segment 4 of Palatine/Willow Road

Improvement	Estimated Cost
Ultimate	
Roadway	$5,600,000
Structure Improvements	$100,000
Transit Improvements	$600,000
Total Estimated Cost for Ultimate Improvements	**$6,300,000**
Low-Cost	
Signal Interconnection	$300,000
Transit Improvements	$10,000
Total Estimated Cost for Low-Cost Improvements	**$310,000**
Total Estimated Cost for All Improvements	**$6,610,000**

FACILITY CHARACTERISTICS

Existing R/W

Existing Signal

Existing Structure

ENVIRONMENTAL CHARACTERISTICS

Wetlands

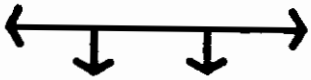
Floodplain

Sensitive Land Use

RECOMMENDED IMPROVEMENTS

Proposed R/W

Proposed Signal



Consolidate Access

Mid-Mile Collector

Palatine/Willow Road

Existing Facility Characteristics

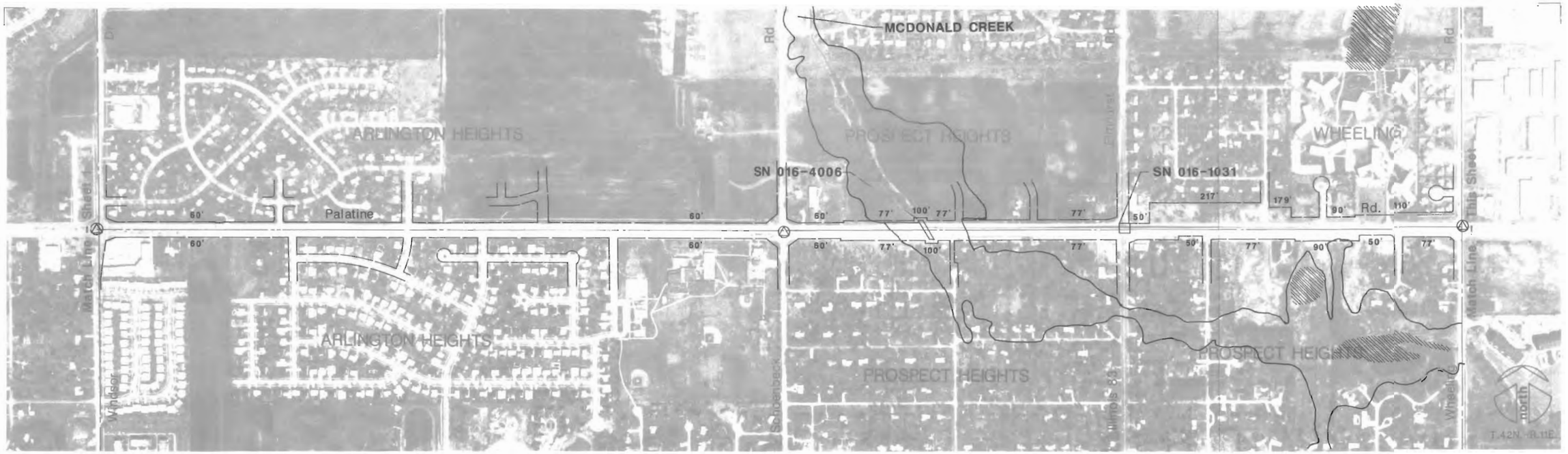
SRA Strategic Regional Arterial Planning Study

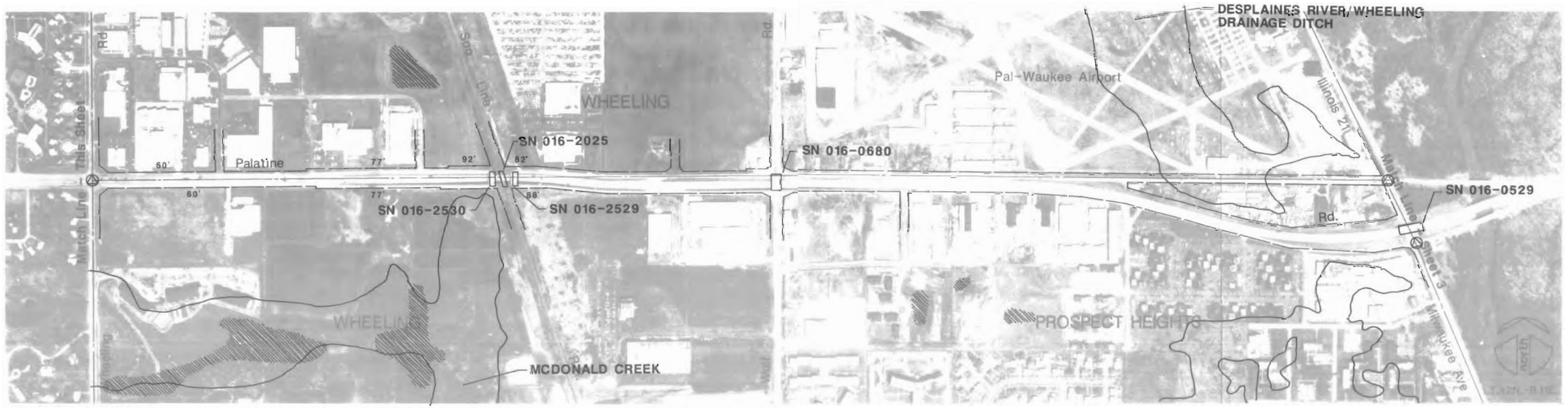
prepared by Harland Bartholomew & Associates, Inc. for the

ILLINOIS DEPARTMENT OF TRANSPORTATION

Scale in Feet
0 200 400 800 1200

Route Map A-1





Palatine/Willow Road

Existing Facility Characteristics

SRA Strategic Regional Arterial Planning Study

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ILLINOIS DEPARTMENT OF TRANSPORTATION

Scale in Feet
0 200 400 800 1200

Route Map A-2

Palatine/Willow Road

Existing Facility Characteristics

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ILLINOIS DEPARTMENT OF TRANSPORTATION

Scale in Feet
0 200 400 800 1200

Route Map A-3

Palatine/Willow Road

Existing Facility Characteristics

SRA Strategic Regional Arterial Planning Study

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ILLINOIS DEPARTMENT OF TRANSPORTATION

Scale in Feet
0 200 400 800 1200

Route Map A-4

Palatine/Willow Road

Environmental Characteristics

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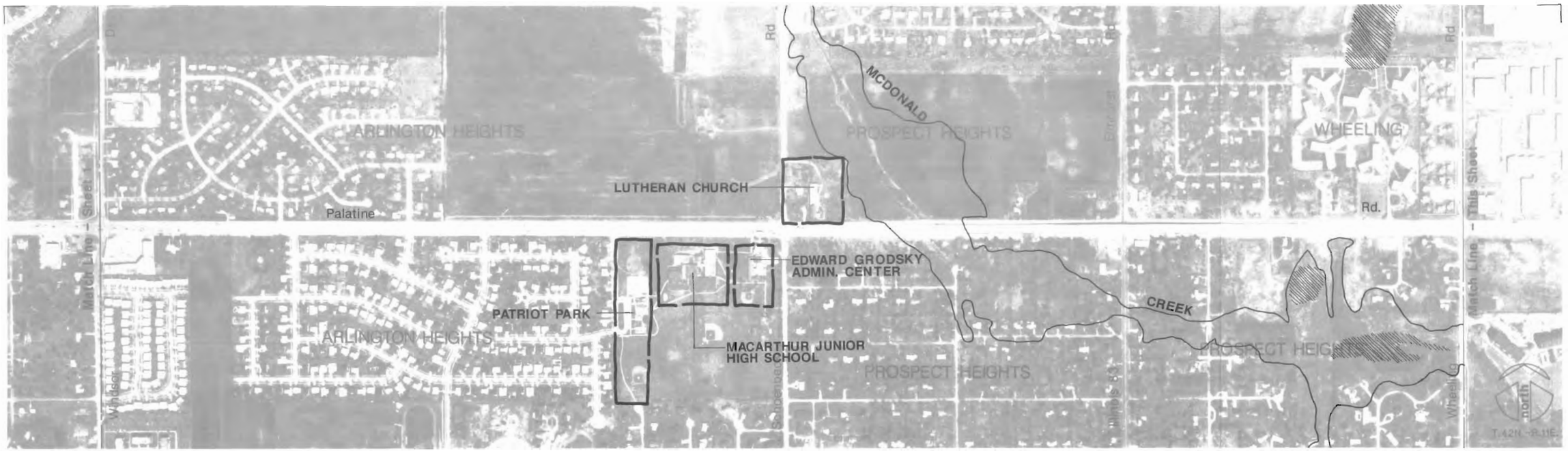
ILLINOIS DEPARTMENT OF TRANSPORTATION

Scale in Feet
0 200 400 800 1200

Route Map B-1



Palatine/Willow Road

Environmental Characteristics

SRA Strategic Regional Arterial Planning Study

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ILLINOIS DEPARTMENT OF TRANSPORTATION

Scale in Feet
0 200 400 800 1200

Route Map B-2

Palatine/Willow Road

Environmental Characteristics

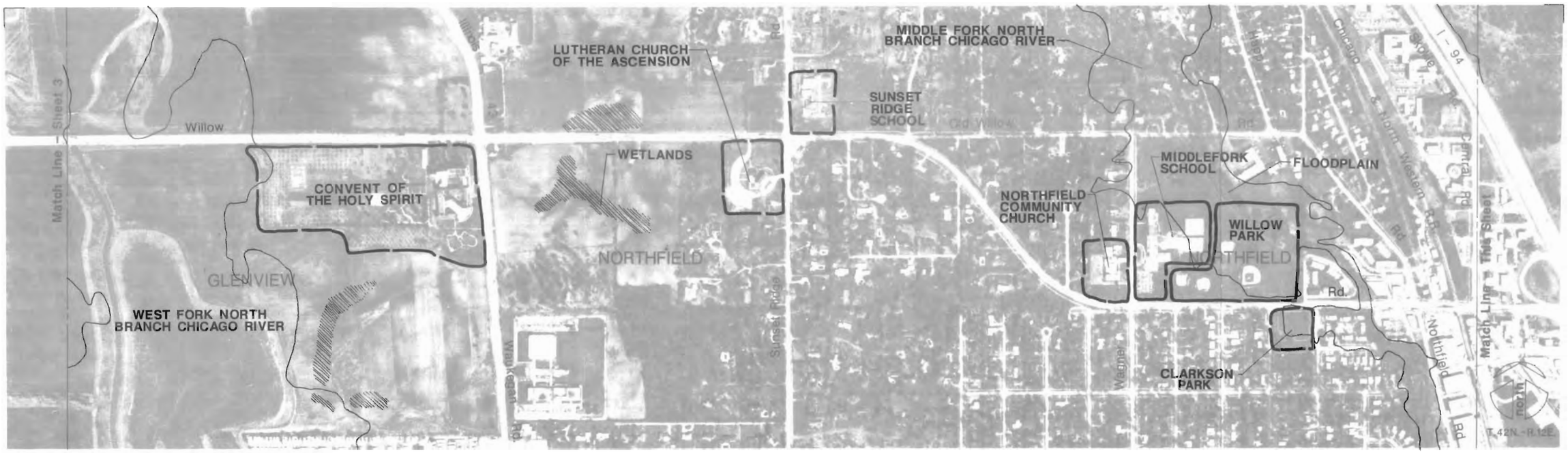
SRA Strategic Regional Arterial Planning Study

prepared by Harland Bartholomew & Associates, Inc. for the

ILLINOIS DEPARTMENT OF TRANSPORTATION

Scale in Feet
0 200 400 800 1200

Route Map B-3



Palatine/Willow Road

Environmental Characteristics

SRA Strategic Regional Arterial Planning Study

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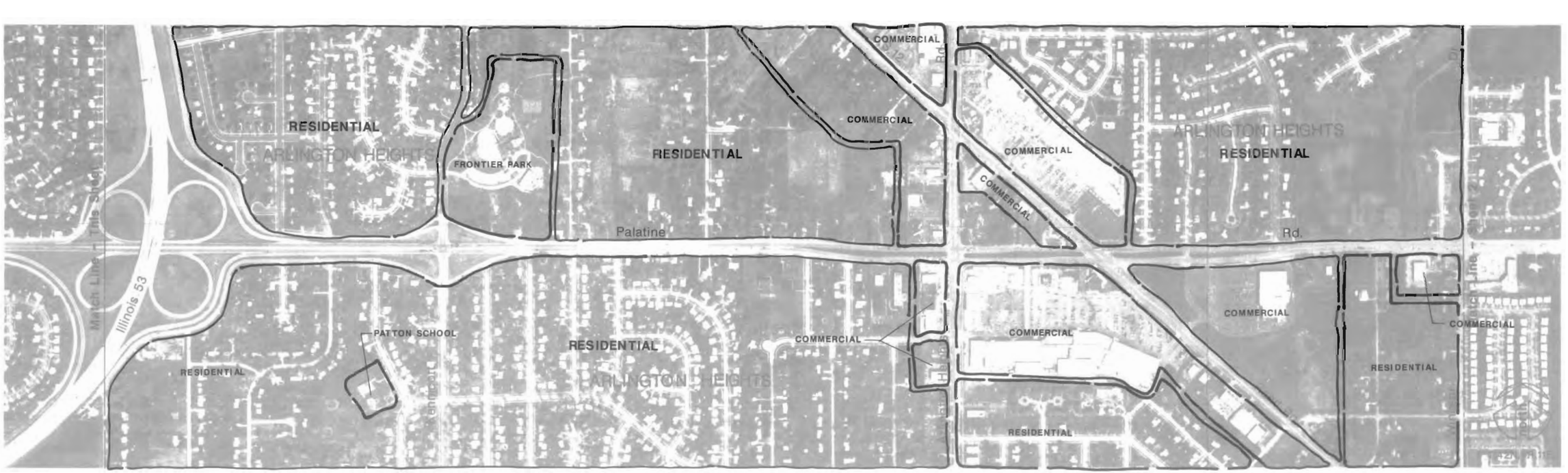
Scale in Feet
0 200 400 800 1200

Route Map B-4



Palatine/Willow Road

Development Characteristics

SRA Strategic Regional Arterial Planning Study

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ILLINOIS DEPARTMENT OF TRANSPORTATION

Scale in Feet
0 200 400 800 1200

Route Map C-1

Palatine/Willow Road

Development Characteristics

SRA Strategic Regional Arterial Planning Study

prepared by Harland Bartholomew & Associates, Inc. for the

ILLINOIS DEPARTMENT OF TRANSPORTATION

Scale in Feet: 0 200 400 800 1200

Route Map C-2

Palatine/Willow Road

Development Characteristics

SRA Strategic Regional Arterial Planning Study

prepared by Harland Bartholomew & Associates, Inc. for the

ILLINOIS DEPARTMENT OF TRANSPORTATION

Scale in Feet
0 200 400 800 1200

Route Map C-3

Palatine/Willow Road

Development Characteristics

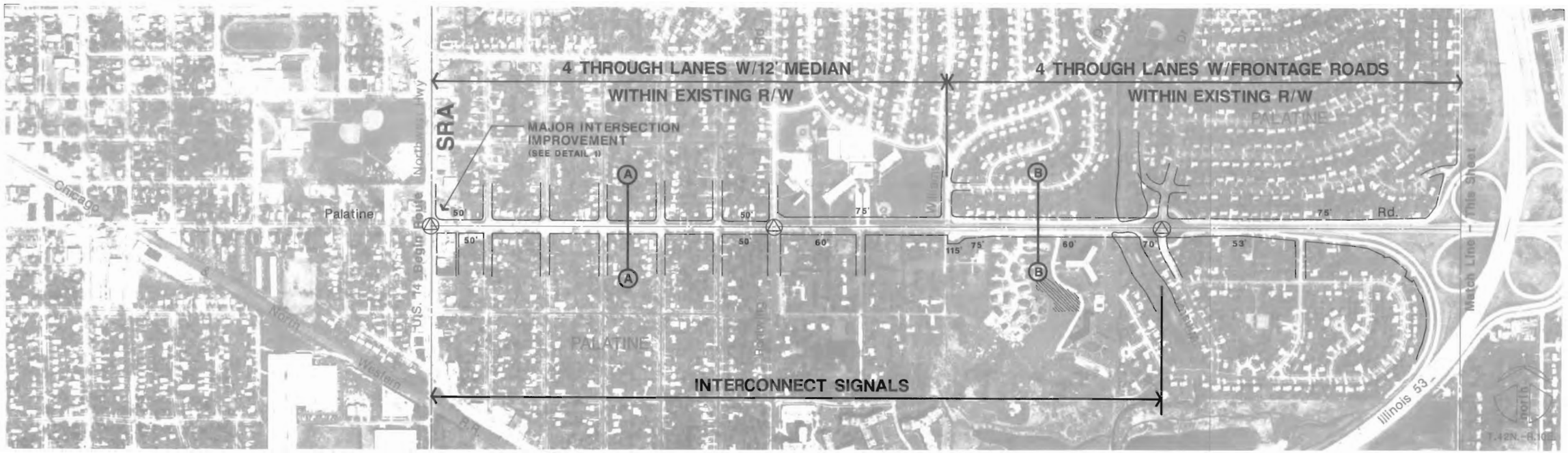
SRA Strategic Regional Arterial Planning Study

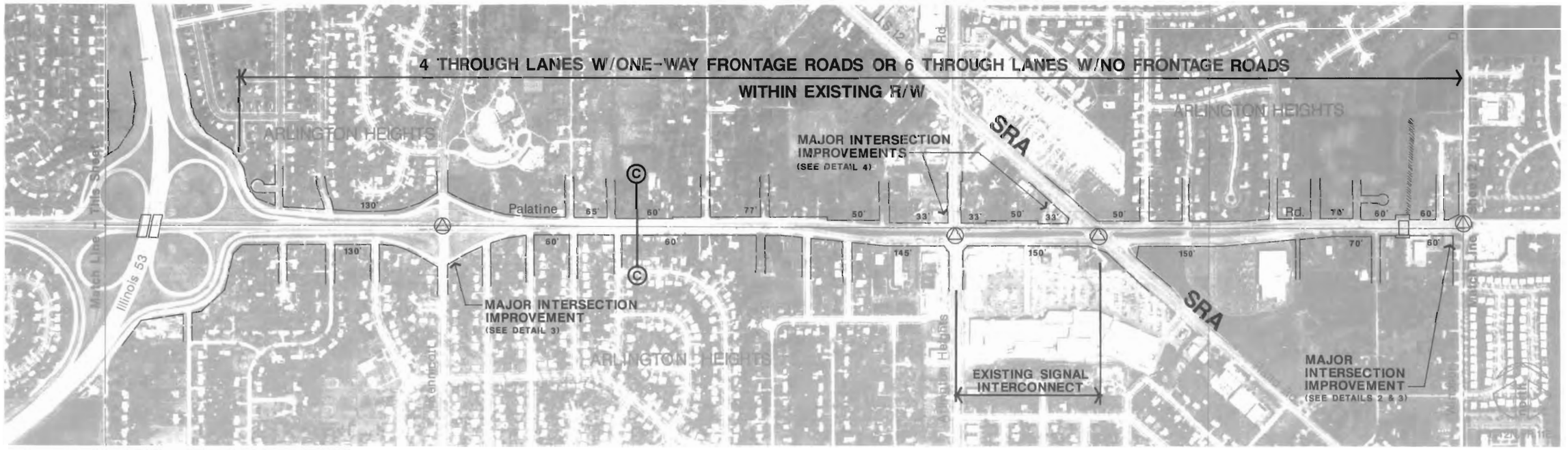
prepared by Harland Bartholomew & Associates, Inc. for the

ILLINOIS DEPARTMENT OF TRANSPORTATION

Scale in Feet
0 200 400 800 1200

Route Map C-4





Palatine/Willow Road

Ultimate Recommended Improvements

SRA Strategic Regional Arterial Planning Study

prepared by Harland Bartholomew & Associates, Inc. for the

ILLINOIS DEPARTMENT OF TRANSPORTATION

Scale in Feet
0 200 400 800 1200

Route Map D-1

Palatine/Willow Road

Ultimate Recommended Improvements

SRA Strategic Regional Arterial Planning Study

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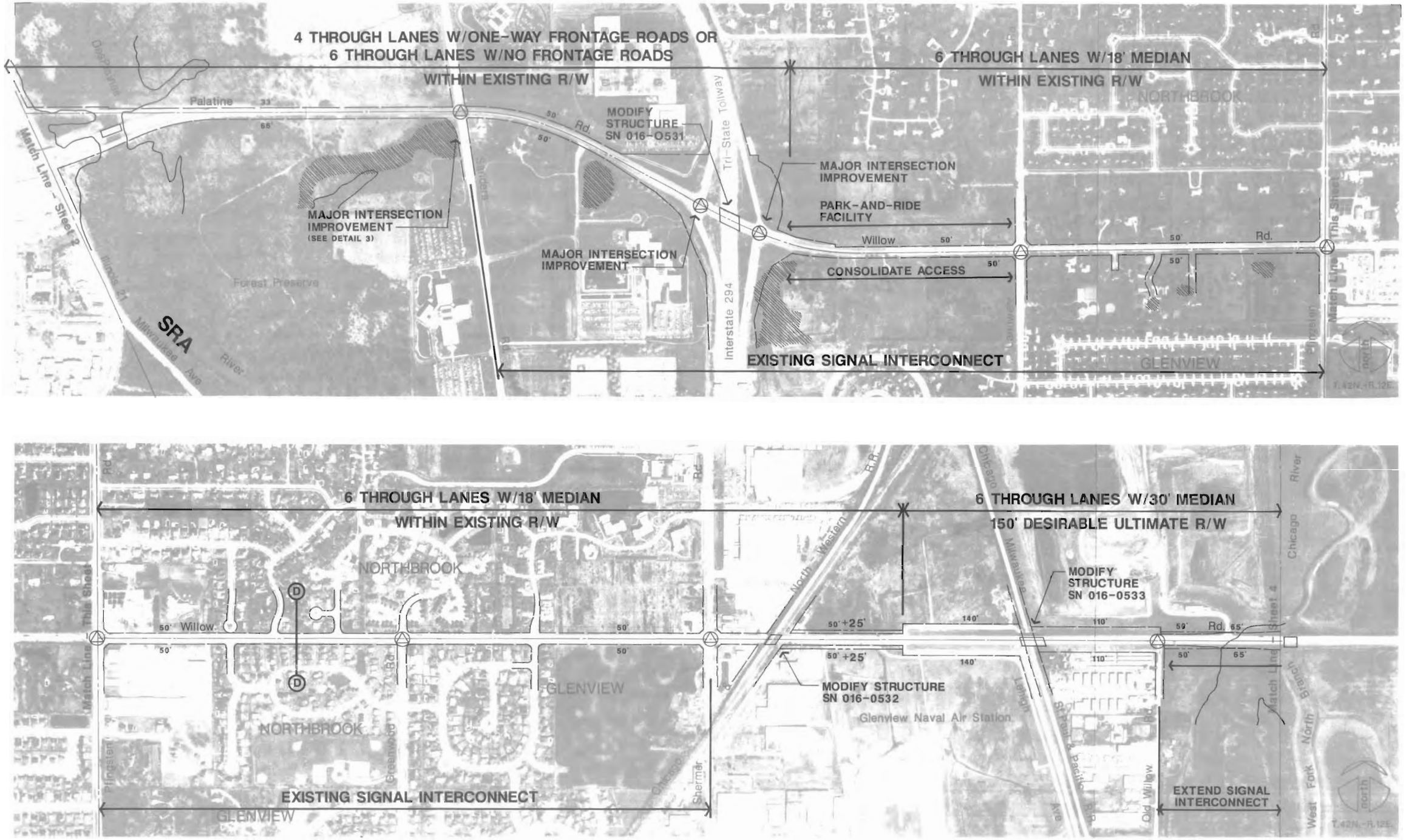
ILLINOIS DEPARTMENT OF TRANSPORTATION

Scale in Feet
0 200 400 800 1200

Route Map D-2



Palatine/Willow Road

Ultimate Recommended Improvements

SRA Strategic Regional Arterial Planning Study

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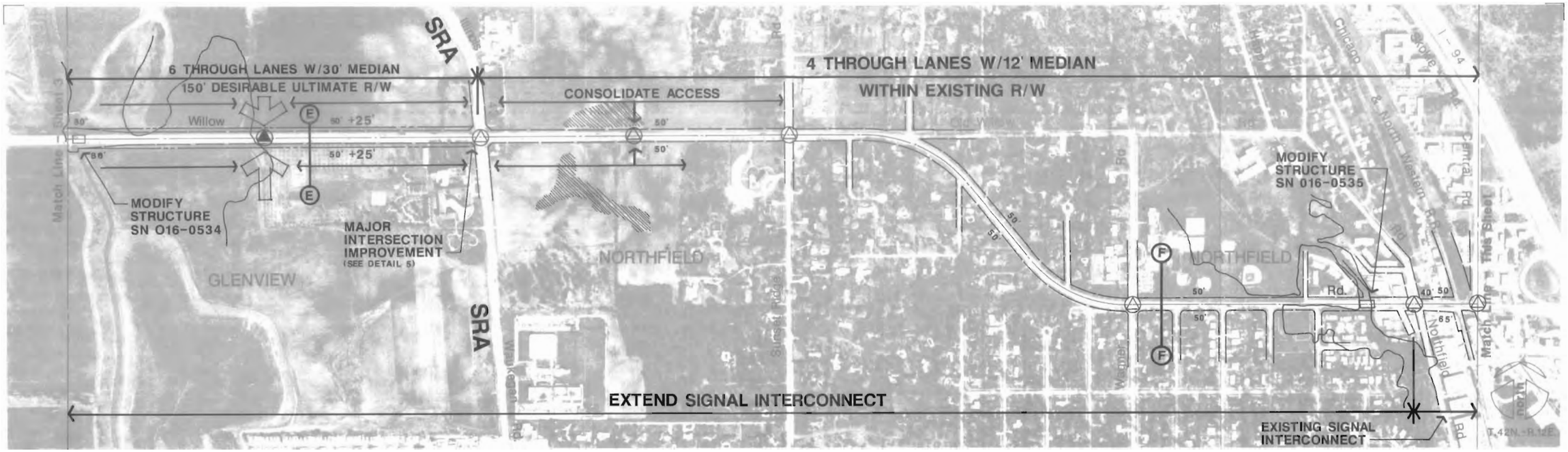
ILLINOIS DEPARTMENT OF TRANSPORTATION

Scale in Feet
0 200 400 800 1200

Route Map D-3



Palatine/Willow Road

Ultimate Recommended Improvements

SRA Strategic Regional Arterial Planning Study

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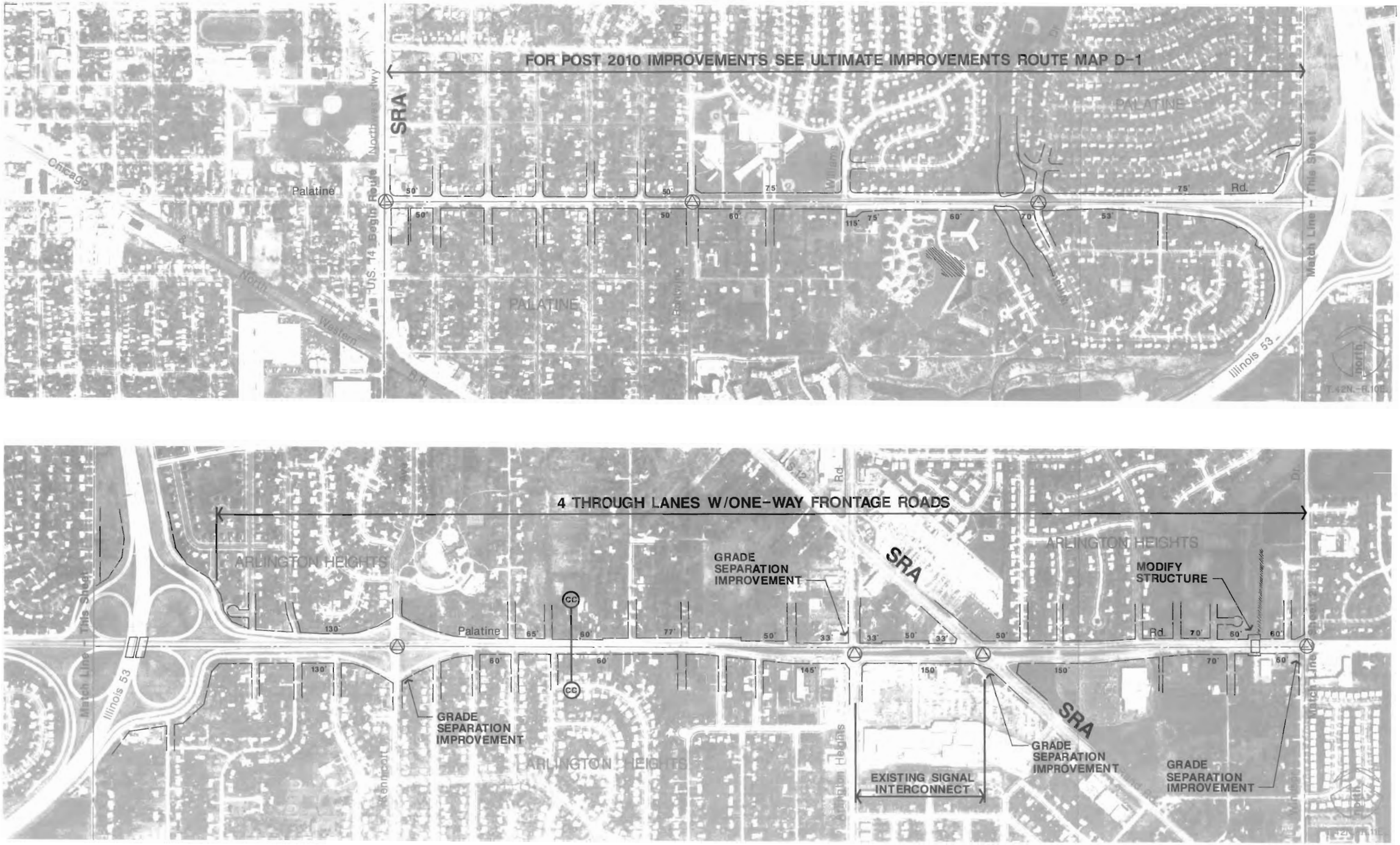
ILLINOIS DEPARTMENT OF TRANSPORTATION

Scale in Feet
0 200 400 800 1200

Route Map D-4



Palatine/Willow Road

Post 2010 Recommended Improvements

SRA Strategic Regional Arterial Planning Study

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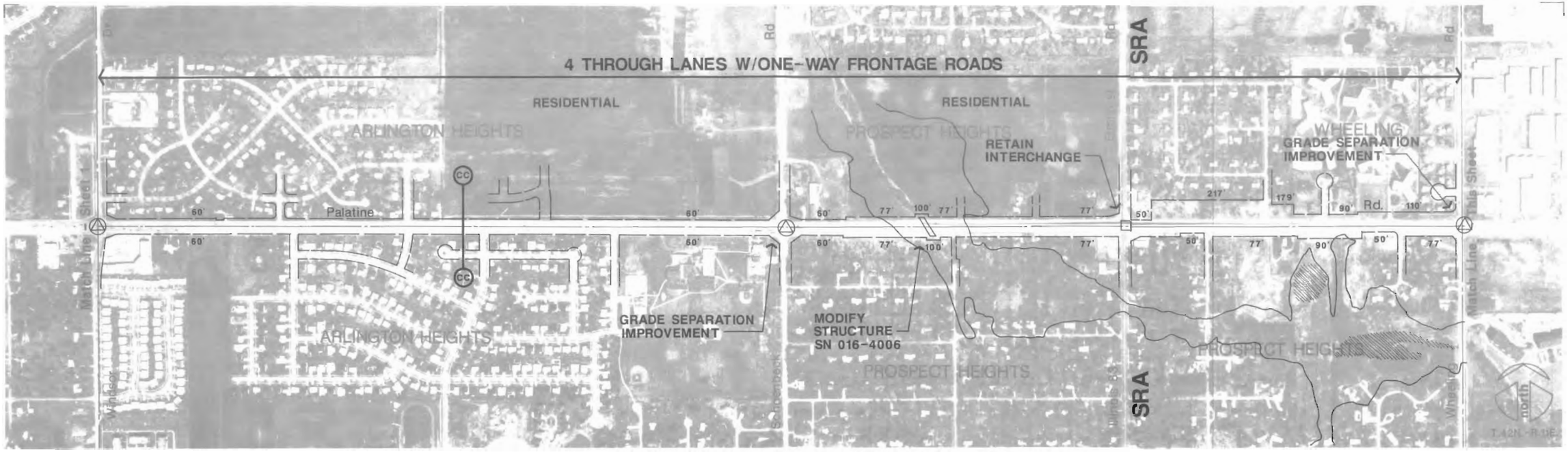
ILLINOIS DEPARTMENT OF TRANSPORTATION

Scale in Feet
0 200 400 800 1200

Route Map D-1A



Palatine/Willow Road

Post 2010 Recommended Improvements

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Scale in Feet
0 200 400 800 1200

Route Map D-2A

Palatine/Willow Road

Post 2010 Recommended Improvements

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Scale in Feet
0 200 400 800 1200

Route Map D-3A

Palatine Road @ U.S.14 (Northwest Highway)

SRA Strategic Regional Arterial Planning Study

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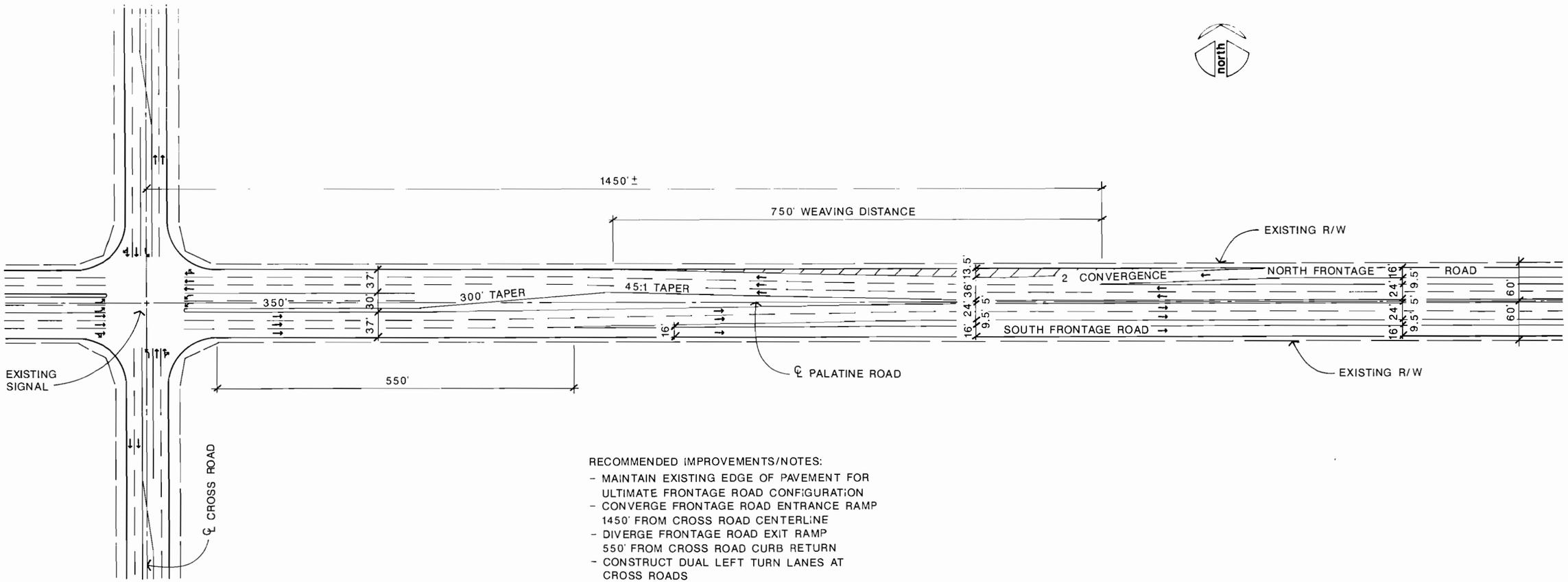
ILLINOIS DEPARTMENT OF TRANSPORTATION

Detail 1



RECOMMENDED IMPROVEMENTS/NOTES:

- MAINTAIN EXISTING EDGE OF PAVEMENT FOR ULTIMATE FRONTAGE ROAD CONFIGURATION
- CONVERGE FRONTAGE ROAD ENTRANCE RAMP 1450' FROM CROSS ROAD CENTERLINE
- DIVERGE FRONTAGE ROAD EXIT RAMP 550' FROM CROSS ROAD CURB RETURN
- CONSTRUCT DUAL LEFT TURN LANES AT CROSS ROADS
- CROSS ROADS SUBJECT TO ULTIMATE FRONTAGE ROAD CONFIGURATION ARE WINDSOR, SCHOENBECK, AND WHEELING ROADS

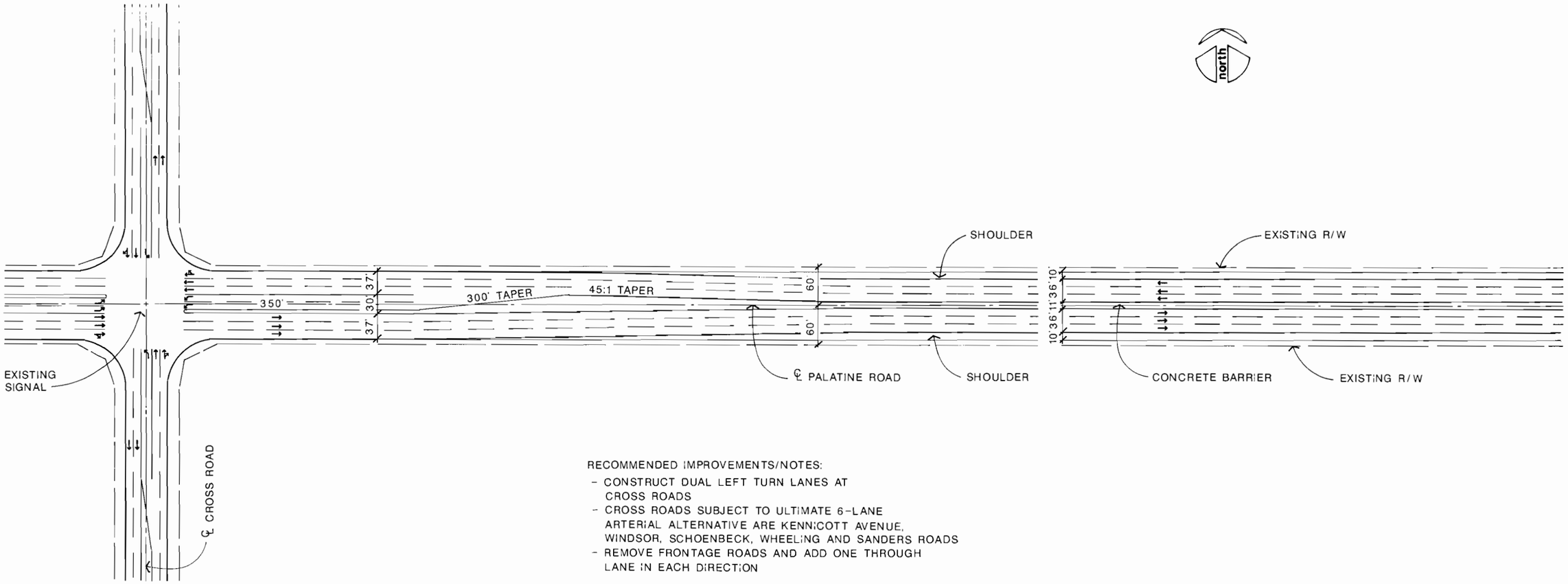
Ultimate Frontage Road Configuration (For Junior Expressway Alternative)

SRA Strategic Regional Arterial Planning Study

prepared by Harland Bartholomew & Associates, Inc. for the

ILLINOIS DEPARTMENT OF TRANSPORTATION

Detail 2



RECOMMENDED IMPROVEMENTS/NOTES:

- CONSTRUCT DUAL LEFT TURN LANES AT CROSS ROADS
- CROSS ROADS SUBJECT TO ULTIMATE 6-LANE ARTERIAL ALTERNATIVE ARE KENNICOTT AVENUE, WINDSOR, SCHOENBECK, WHEELING AND SANDERS ROADS
- REMOVE FRONTAGE ROADS AND ADD ONE THROUGH LANE IN EACH DIRECTION

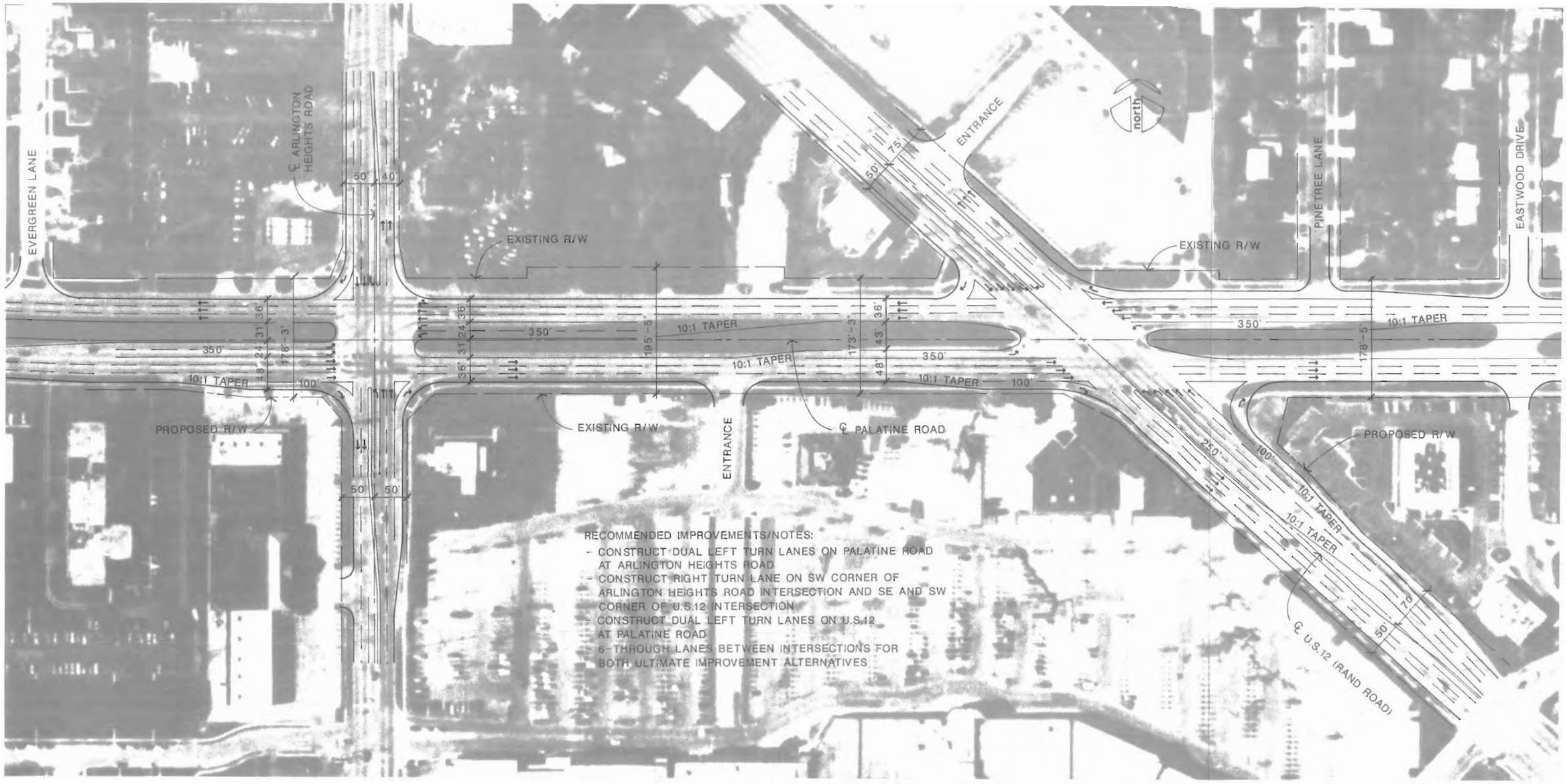
Ultimate 6-Lane Arterial Alternative

SRA Strategic Regional Arterial Planning Study

prepared by Harland Bartholomew & Associates, Inc. for the

ILLINOIS DEPARTMENT OF TRANSPORTATION

Detail 3



Palatine Road @ U.S.12 (Rand Road) and Arlington Heights Road

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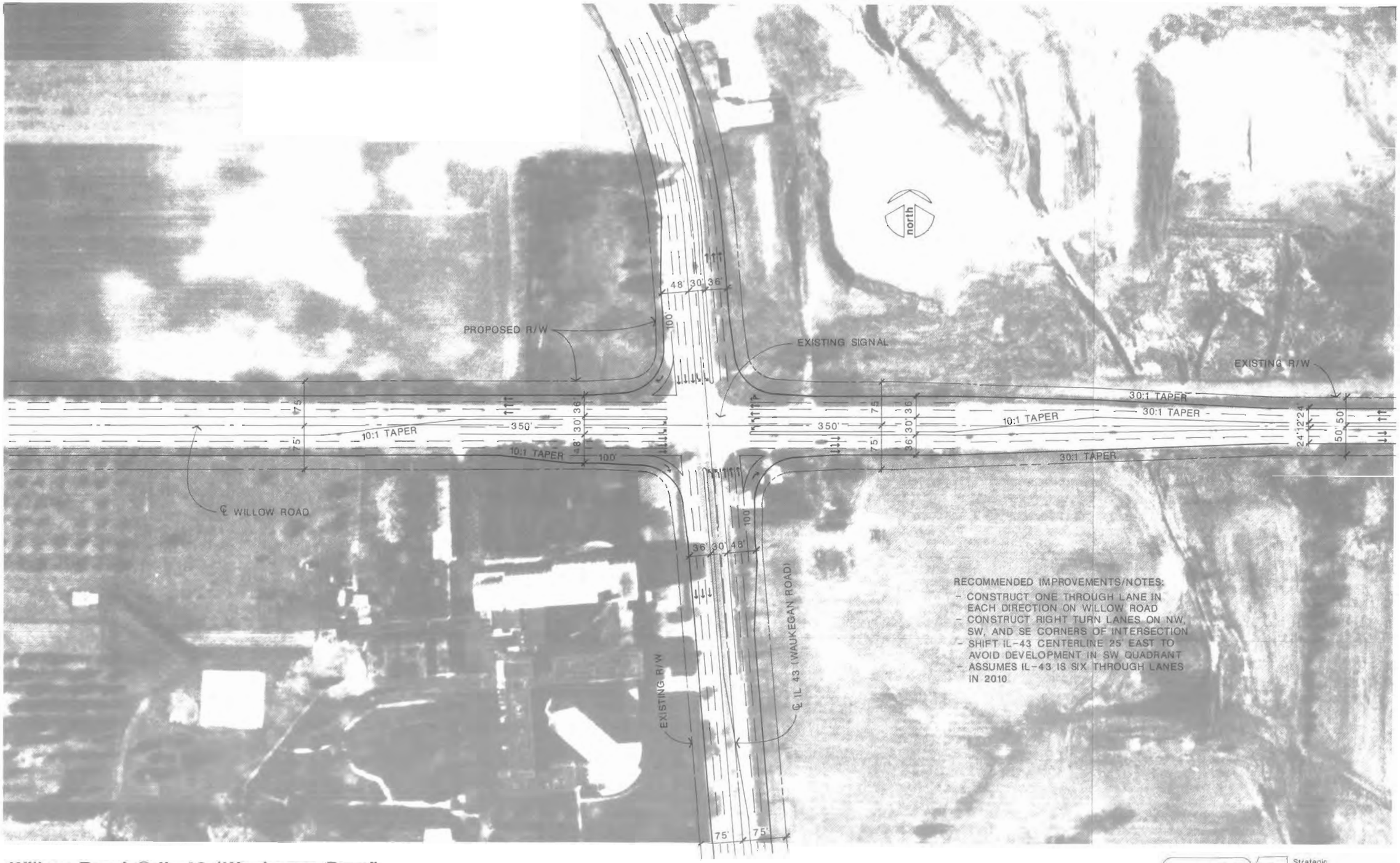
ILLINOIS DEPARTMENT OF TRANSPORTATION

Detail 4



Willow Road @ IL 43 (Waukegan Road)

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Detail 5