Chapter VIII
Circulation

West Warwick Comprehensive Plan

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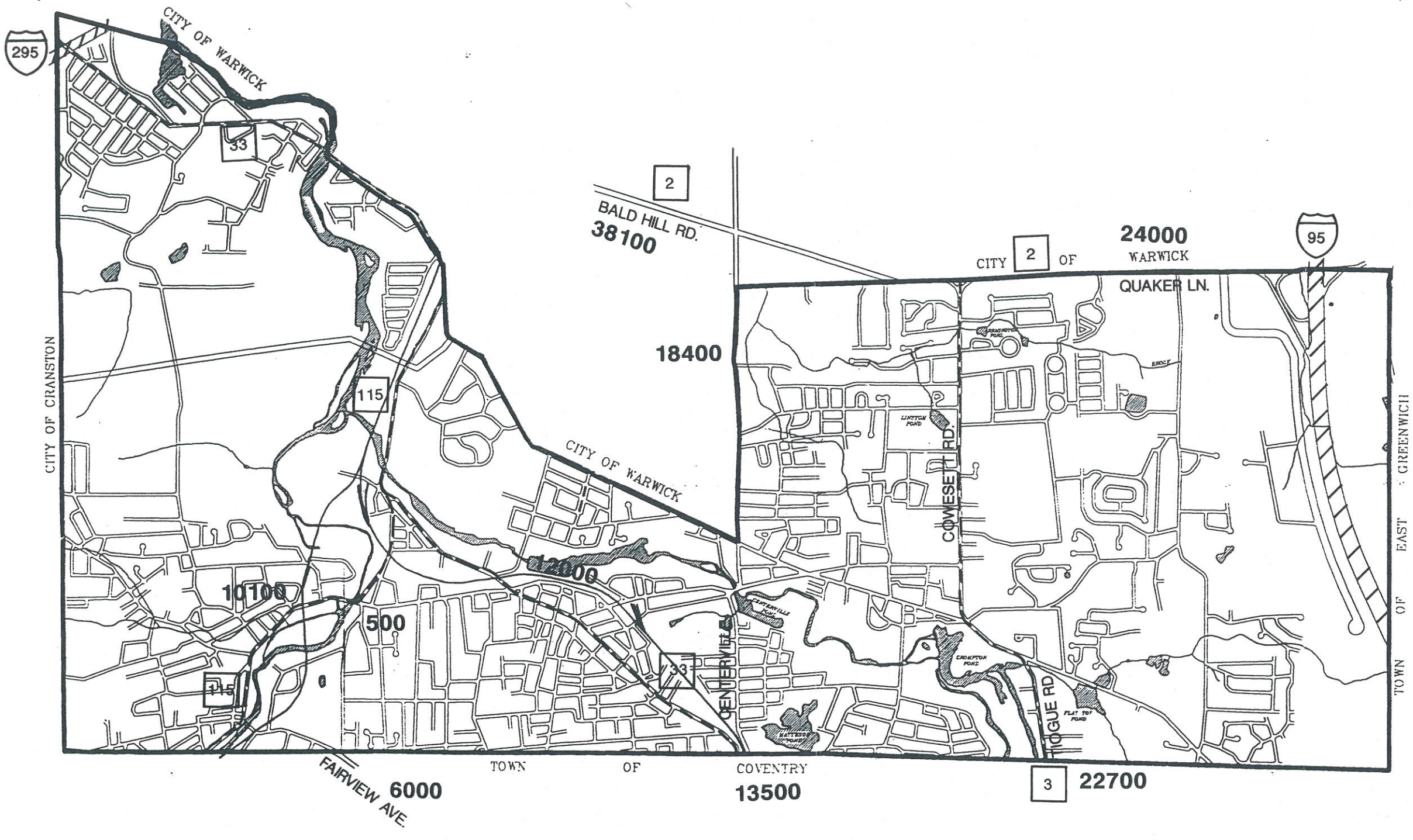

Source: Rhode Island Department of Transportation

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Comprehensive Plan
West Warwick, Rhode Island

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Community Planners
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Providence, Rhode Island
401/274-1360 02903

TRAFFIC FLOW MAP

Figure VIII-1

Date:
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Scale: As Noted

Digital data provided by the R.I. Geographic Information System.

CHAPTER VIII
CIRCULATION

"Shall consist of the inventory and analysis of existing and proposed major circulation systems, street patterns and any other modes of transportation in coordination with the land use element. The policies and implementation techniques must be identified for inclusion in the implementation program element." -- Rhode Island Comprehensive Planning and Land Use Regulation Act

The circulation element of the comprehensive plan addresses the various methods and systems of transportation available within a community which enable the movement of people and goods from place to place. These systems vary from community to community and they evolve and change over time. The modes of transportation, that is the methods of conveyance, are affected by technology, population densities, cost, public attitude, and infrastructure.

The primary means of travel in West Warwick in 1991 is the automobile. This is typical for a community this size during the so called automobile age. Other modes of transportation are available in West Warwick. People walk to their destinations; many ride the bus or utilize the senior citizen van; and some travel by bicycle. However, in West Warwick there is no rapid rail transit, no passenger and rail freight service and no airport. The automobile is dominant. and the transportation infrastructure has been built over the decades to support auto travel. This same infrastructure facilitates goods movement by trucks.

It is the expectation here that in spite of the problems typically associated with the automobile such as traffic congestion, air emissions, and reliance on imported oil, to name a few, there will continue to be heavy reliance on the automobile for personal mobility and on trucks for goods movement. Many of the decisions relating to transportation on the municipal level reflect national policy decisions that establish the allocation of federal financial resources. These likely will be decisions that continue to support the development and maintenance of our roads, highways and bridges. In this context, infrastructure improvements and land use controls can result in reduced traffic congestion and overall improved traffic conditions; and technological changes can improve air quality, introduce alternative fuels, and maintain the auto as an effective and desirable means of transportation.

Other forms of transportation will continue to exist and may also receive federal support, although to a significantly lesser degree than highways. These modes are not expected to dramatically increase their share of transportation ridership market in the near term and only a revolutionary change can make that dramatic effect. In addition to considering the street and highway infrastructure, this plan element advances a number of recommendations that are in keeping with the desire to retain alternatives to the automobile and to develop some of the choices that are available.

VIII.1 Roads and Highways

The road and highway network in West Warwick developed around the early industrial settlements along the Pawtuxet River and the mill villages that grew in association with the textile industry. The neighborhoods were "walking neighborhoods" focused on the mills and residential development. These were connected to the rural agricultural settlements and villages by the network of early roadways that began to take shape in the 17th century.

The West Warwick of today has inherited the early street and roadway network, and as the residential, industrial and commercial development patterns have changed with the advent and maturing of surburbia, the street system has expanded to meet the demands for more land ac-

cess. Residential subdivisions of land have dispersed the population and industrial activity is less focused on the Pawtuxet River where the textile mills once concentrated a large labor force. Instead, industrial activity is also dispersed, and the majority of the population no longer walks to work. Commercial retail centers have been established away from the Arctic Central Business District as large shopping areas have consumed extensive tracts of formerly undeveloped land along major highway arterials. Route 3, for example, is a former rural highway which now has an average daily traffic flow of approximately 23,000 vehicles and serves to access neighborhoods, retail centers, and restaurants while conveying east-west through traffic (see Figure VIII-1).

People are increasingly more reliant on their auto and there are more autos in West Warwick than ever before. This has had an effect on the Town and on the perception people have of their community. Citizens responding to the May 1990 Public Opinion Survey frequently mentioned traffic congestion and dirty sidewalks as things they liked the least about town. There is a strong feeling of dissatisfaction with road maintenance, with 60 percent expressing the feeling that it is only fair to poor while 39 percent believe it is good to excellent.

Motor Vehicle Registrations - There are nearly 23,000 motor vehicles registered in West Warwick, and the number of registrations has been increasing. From 1984 to 1988, the most recent data available, vehicle registrations increased 18.6 percent. Data in Table VIII-1 profiles the community for the sample years 1984 and 1988. Registrations in the Town represent 3 percent of the state total.

Table VIII-1
Total Vehicles By Classification
Years 1984 and 1988

	Vehicle Classification								
YEAR	1	2	3	4	5	6	7	8	TOTAL
1984	15,901	1,866	266	369	29	12	67	773	19,303
1988	18,635	2,423	324	487	16	16	57	936	22,894
% Increase 1984 - 88									+18.6

Classification Code
1 - Gasoline auto
2 - Gasoline trucks <6001 lbs.
3 - Gasoline trucks 6001 - 8500 lbs.
4 - Gasoline trucks >8500 lbs.
5 - Diesel auto
6 - Diesel trucks <8501 lbs.
7 - Diesel trucks >8501 lbs.
8 - Motorcycles

The State forecast for West Warwick for the year 2010 is 25,576. This represents an increase of 11.7 percent from the 1988 total.
Source: R.I. Department of Transportation

Accidents - Data collected on accidents by the R.I. Department of Transportation shows that from 1984 through 1988 accidents have increased in every category measured. The rate of increase for all accidents during that period was nearly 33 percent. This exceeds the rate of increase of motor vehicle registrations in the Town (18.6 percent) and the rate of increase in traffic accidents statewide (27 percent). Table VIII-2 summarizes accident data from 1984 through 1988.

In spite of these increases, the Town's 5 year totals for all categories are less than 3 percent of the state total and less than the Town's percentage of total vehicles registered in the state.

The RIDOT summary of the accident data for the Town reveals that approximately one-third of all accidents are rear end types of accidents. This is most common of congested areas and places where there are unexpected stops. There are many accidents occurring as a result of side street interference with a major collector road. This is especially noticeable on Route 3 and Route 117.

Table VIII-2
Accident Data 1984 - 1988

Type of Accident	1984	1985	1986	1987	1988	% Change 1984-88
Total Accidents	482	545	541	652	640	+33%
Fatal Accidents	0	2	0	2	0	--
Injury Accidents	142	174	182	193	240	+69%
Property Damage Accidents	340	369	359	457	400	+18%
Fatalities	0	2	0	2	0	--
Injuries	204	237	261	262	335	+64%

Source: Rhode Island Department of Transportation

There are incidents of accidents immediately adjacent to bridges. This may be indicative of poor sight distances and line of sight obstructions caused by railings and parapets. There are high accident locations at several intersections where there appear to be geometric deficiencies. The problem sites are listed in Table VIII-3 and are identified on Figure VIII-2.

Table VIII-3
Locations with Noticeable Accident Frequencies

Veterans Square (Route 117/Brookside/Main St.)	Route 3/Church
Legion/Main/Roberts	Route 3/Coit
Main/East Main	Route 33/Main
Main/Clyde	Providence (Rt 33)/Wakefield
Providence/Green Hill	Providence (Rt 33)/Route 115
Curson/Main	Route 33/Route 117
Main/East Main/Maple	Route 3/Main/Greenwich Ave.
Providence/Factory	Weaver/Legion Way
Providence/Main/Legion	Main Street/New London Avenue/Church Street
Clyde/Main	Phenix/Main

Source: Rhode Island Department of Transportation

The location most frequently identified in the citizen survey as a place with traffic problems is Veterans Square. Main Street is also often mentioned in the survey with the entire street, and certain intersections (Church and Main, New London Avenue and Main, Columbus Square, Phenix and Main) attracting residents' attention as dangerous or congested areas. In fact, Main Street figures in 40 percent more responses than Veterans Square if all the individual problem points are counted in aggregate. These responses are supported by the RIDOT accident data.

VIII.2 Functional Classifications

Functional classification is the process of grouping streets and highways according to the character of their intended use. The basis of the system is the relationship between the roads and the functions they serve which generally are grouped into two fundamental services:

(a) Access to property, and
(b) Travel mobility

Most roads perform in varying degrees each of these services and it is the combination of these services that determine which of the following type of roads they are classified as:

(a) Local road - emphasizes access to property
(b) Collector road - offers a balance between property access and travel mobility
(c) Arterial - emphasizes a high level of mobility for through movements

The classification is also based on the type of area served, based on the U.S. Bureau of the census definition, whether it is an urban area, a small urban area or a rural area. The rules governing the federal aid highway classification system require that the urban area boundary must smooth out irregularities, encompass fringe areas of residential, commercial, industrial, national defense, and transportation significance; include major highway interchanges where logical; and consider transit service areas.

This system of classification is used by the state in developing long range transportation plans and in determining federal aid funding categories. It is also used to determine jurisdiction for highway maintenance responsibility. Classification and eligibility under this system does not automatically mean that federal funds are available for improvements.

The Town of West Warwick is completely encompassed by the Providence-Warwick-Pawtucket urbanized boundary. Table VIII-4 shows the functional classification breakdown of the roads in West Warwick.

Table VIII-4
Functional Classification and Miles of Roadway

Classification	Length (miles)
Interstate (Urban)	1.35
Connecting Rural Principal Arterials (Urban)	1.20
Connecting Rural Minor Arterials (Urban)	2.05
Principal Urban Arterials	0.55
Minor Urban Arterials	11.95
Urban Collectors	12.70
Total	29.80

Source: Rhode Island Department of Transportation

Scheduled State Improvements - The Rhode Island Department of Administration, Division of Planning , in conjunction with the Rhode Island Public Transit Authority, the State Department of Transportation, and the cities and towns, prepares the Transportation Improvement Plan (TIP). This is a 6 year scheduling document which currently covers the period 1989-1995 and it contains a "Biennial Element" covering the first two years of the scheduled improvements. The inclusion of a project in the Biennial Element makes the project eligible for federal funding. The funding category is related to functional classification as shown in Table VIII-5. West Warwick is entirely in the urban area.

Types of Projects - There are nine types of projects scheduled by the Transportation Improvement Program. These are:

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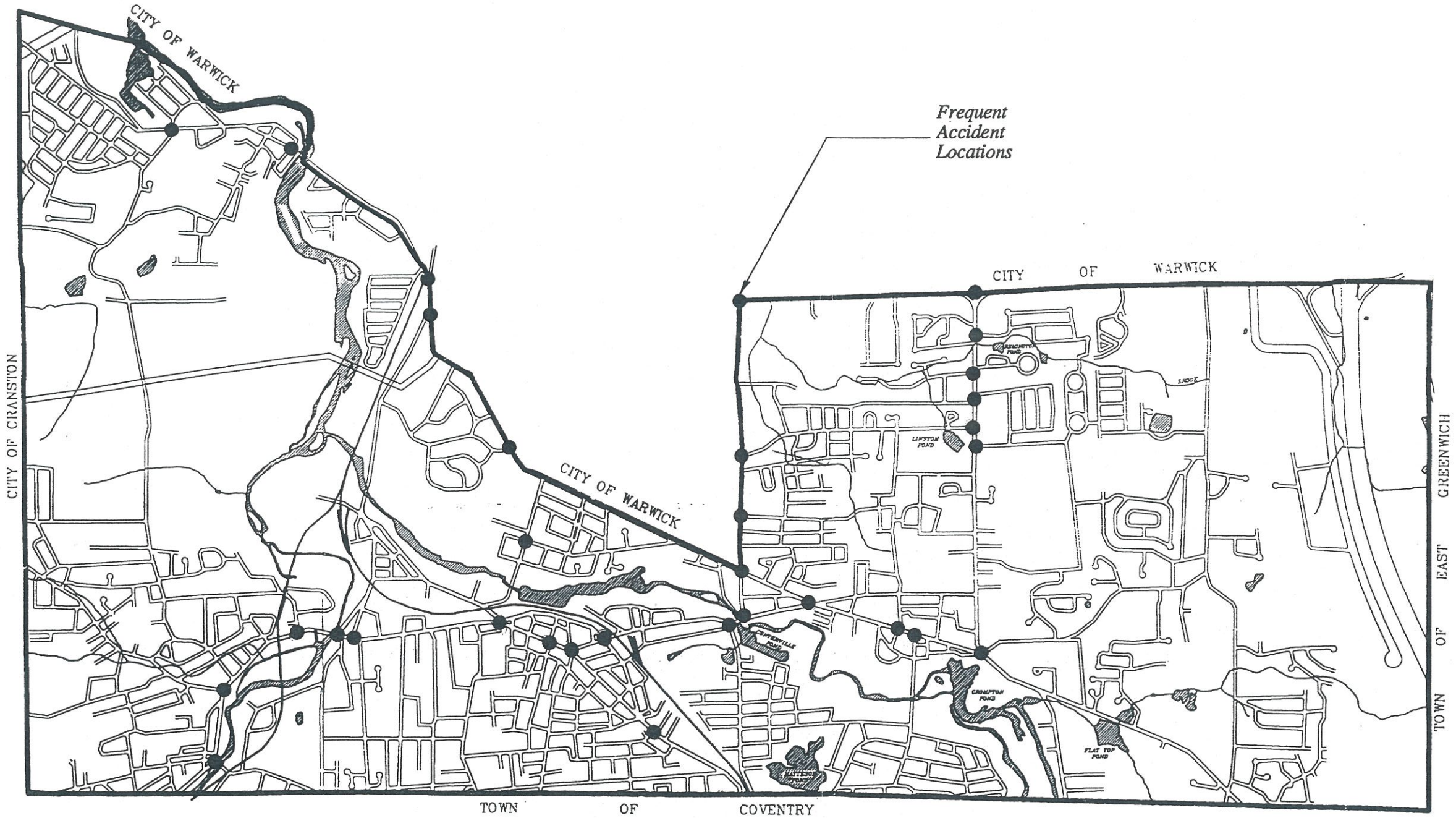

Source: Rhode Island Department of Transportation

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NOTICEABLE ACCIDENT FREQUENCIES

Figure VIII-2

Date:
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Scale: As Noted

Digital data provided by the R.I. Geographic Information System.

1. Interstate - These connect principal metropolitan areas;

2. Interstate 4R - These maintain the existing interstate system;

3. Primary - These are to develop a system of main roads for interstate, statewide, and

Table VIII-5
Town of West Warwick
Relationship of Functional Classification to Federal-Aid System

Functional Classification	Federal-Aid Funding Category
Urban Area	
Interstate	Interstate
Principal Arterial-Connecting Link	Primary
Principal Arterial-Non-Connecting Link	Urban
Minor Arterial	Urban
Collector	Urban
Rural Area	
Interstate	Interstate
Principal Arterial	Primary
Minor Arterial	Primary
Major Collector	Secondary

Source: Rhode Island Department of Transportation

regional travel, consisting of rural arterial routes and their extension into and through urban areas. Activities eligible for federal funding in this category include the construction of bus lanes, highway traffic control devices, bus passenger loading areas and facilities, fringe and transportation corridor parking to serve mass transportation passengers, and programs for roadway resurfacing, restoration and rehabilitation (3R)

4. Urban - These are for the improvement of service to major centers of activities in urbanized areas. Activities that are eligible for funding typically are projects aimed at obtaining maximum highway efficiency through traffic engineering such as minor roadway widening, modernized traffic signalization, traffic channelization, and bus loading areas and facilities.

5. Rural Secondary - This category of funding is to assist state and local governments improve federal-aid secondary systems. Eligible activities include design, right-of-way acquisition and construction, and a portion of this funding category must be expended on 3R projects.

6. Highway Safety - This is for improving driver, vehicle and roadway safety. It includes driver education and motor vehicle inspection, and provides for design, construction and maintenance improvements which include activities such as pavement marking, elimination of roadside obstacles and high hazard and road/rail crossing elimination.

7. Bridge Replacement - This program is for the replacement or rehabilitation of important highway bridges on any system, and at least 15 percent of the total expended statewide must be for "off system" bridges.

8. Urban Mass Transportation - This category provides capital and operating cost assistance for improvements to urban mass transportation systems. Eligible capital costs include buses, mini buses, garages, equipment and special equipment for elderly and handicapped bus transportation.

9. Airport Improvement - This program provides for planning, design, acquisition, and construction of airfield facilities such as runways, taxiways, lighting, public terminals, and safety equipment (e.g., fire trucks and garages). The funding is earmarked for different types of airports and programs, including noise abatement and noise mitigation for schools and residences.

Projects Scheduled for the Town of West Warwick - The schedule of improvements established by the State Transportation Improvement Program, October 1, 1989 to September 30, 1995, for the Town of West Warwick are shown in Table VIII-6.

Table VIII-6
TIP Projects Scheduled for the Town of West Warwick

				Phase & Cost*		
	Project Description	Rank	Funding Category	90-91	92-93	95-95
1.	Natick Bridge #026 Rehabilitation	103	B	—	RC750	—
2.	Veterans Square Route 117	163	P	RC250	RC1500	—
3.	Wakefield Street Providence St. to Main Street	166	U	R 250	—	RC3000

*Cost in Thousands

Key: B - Bridge Replacement
S - Secondary
C - Construction
P - Preliminary Engineering
R - Land Acquisition, Relocation

Source: Rhode Island Department of Transportation

There are no railway crossing, bicycle path - bikeway, commuter parking or airport improvement programs scheduled in the TIP for West Warwick. There are four potential projects that are not committed under the current plan. These are:

1. Route 3 - Warwick city line to Coventry Town line
2. New London Avenue - Providence Street to Main Street
3. Main Street - Legion Way to Coventry Town line
4. Coit Avenue - Route 117 to Route 3

The Rhode Island Department of Transportation currently is in the design phase for improvements to Route 3 in Coventry from Harkney Hill Road to the West Warwick Town line. The section of Route 3 from Coventry to the City of Warwick is a two lane roadway with breakdown lanes that function as travel and turning lanes. The roadway lacks curbing, has drainage problems and the pavement is in fair condition. The land uses along this section of Route 3 include heavy strip commercial development. Seven of the frequent accident locations in the Town are along this section of Route 3, representing 22.5 percent of the total frequent accident locations identified on Figure VIII-2.

Four bridges in West Warwick are scheduled for improvements under the Department of Transportation Bridge Improvement Program. These improvements are planned to occur between 1990 and 1995 at a total estimated cost of $4.25 million, as shown in Table VIII-7.

Table VIII-7
Scheduled Bridge Improvements
1990 State of Rhode Island
Bridge Improvement Program

Bridge No.	Repair Priority	Bridge Name	Commence	End	Total Budget
279	48	Main St. RR	1990	1992	$824,000
28	69	Centerville	1990	1993	$1,026,000
27	119	Royal Mills	1991	1994	$1,114,000
383	151	Natick Bridge	1992	1995	$1,291,000
				Total	$4,255,000

Source: Rhode Island Department of Transportation

Bridges - There are 17 state numbered bridges in Town as identified in Table VIII-8. These are not necessarily state owned. All bridges in Rhode Island, according to the Department of Transportation, that are greater than 20 feet in length are assigned numbers for inspection purposes and are inspected by the state. It is possible to have a bridge constructed by the state, owned by the state, but maintained by the local municipality. A bridge within the state highway line is state maintained.

Table VIII-8
State Numbered Bridges

No.	Name	Street	Crossing	Repair Priority Ranking
*515	Arctic Mill	Factory Street	Over Mill Tail Race	395
28	Centerville	Centerville Road	Pawtuxet River	69
29	Centerville Mill	Centerville Road	Mill Trench	--
382	Clyde	Main Street	Pawtuxet River	601
*384	Clyde Railroad	Main Street	Under P & W RR	--
414	Fairview Avenue	Fairview Avenue	Over Pawtuxet River	616
*514	Francis J Lachapelle	Factory Street	Over Pawtuxet R.S. Branch	667
*279	Main St. R.R. Bridge	Main Street	Washington Secondary	48
456	Pulaski Street	Pulaski Street	Over Pawtuxet River	655
30	Quidnick R.R.	Centerville Road	Over Conrail	--
259	Red Brook	Tiogue Road	Red Brook	--
*244	Riverpoint Railroad	East Main Street	Under RR Wilm. Branch	--
! 27	Royal Mills	Providence Street	Pawtuxet River	119
!725	West Natick Rd	Interstate Rt 295	Over W. Natick Rd. & RR	484
!518	Barton Corner	Interstate Rt 95	Over Quaker Lane	152
! 26	Natick	Providence Street	Pawtuxet River	100
!235	Quaker Lane	Quaker Lane	Hardig Brook	

* Not maintained by the state
! West Warwick - Warwick
-- Not assigned a priority.
Source: Rhode Island Department of Transportation

VIII.3 Public Transportation

Public Transportation services considered here are the fixed route bus system operated by the Rhode Island Public Transit Authority and the assortment of demand-response minibus operations available within the Town of West Warwick. These systems are operated and maintained through fare box revenues and public subsidies. They are not competitive systems.

The fixed route system operates on a scheduled basis on a standard route, for example from Arctic Center to Kennedy Plaza, on a daily basis. The level of service is established by the Public Transit Authority based on ridership demand and it is measured by the frequency of trips commonly referred to as headways.

Demand response minibus transportation, or para-transit as it may sometimes be called, is a more flexible form of transportation that can provide door to door service. The service is primarily used by elderly and handicapped individuals, whose transportation needs cannot be met by fixed route buses, for medical, shopping and recreational oriented activities.

Fixed Route Scheduled Bus Service - The Rhode Island Public Transit Authority (RIPTA) serves West Warwick on two routes, carrying an average of 450 passengers per day to Providence. The lack of bus service was indicated as a "least liked" feature of the Town during the public survey, however, the published survey results do not furnish an indication of the size of the population that expressed this concern. Members of the Citizens Advisory Task Force expressed specific concern that there should be an additional outbound trip from Kennedy Plaza to Arctic after 5 PM on weekdays and that there should be better service to Quonset Point/Davisville.

Voices of concern about levels of service and service areas for the Public Transit Authority or public transportation generally are raised in many forums. The service should be better, but because public transportation operates at a deficit that is publicly subsidized, the additional taxpayer expense must be fully justified.

The bus system operates in a society that prefers automobile transportation. Public Transit Authority ridership in Rhode Island has steadily declined over the last 9 years. Total passengers carried by the Authority have decreased 34 percent since 1981 after experiencing five years of growth in the late 1970's. The decline of revenue passengers is more dramatic, with a loss of nearly 40 percent since 1981. These declines have come even as the number of route miles have remained constant and the number of buses actually increased between 1988 and 1989. The operating deficit increased from $1.88 per mile in 1988 to $2.02 per mile in 1989. The usage declines have been systemwide and reflect national trends. Between 1970 and 1980, according to the most recent data available from the Rhode Island Department of Transportation, public transportation's share of the journey to work trip nationally declined from 12.2 percent to 6.4 percent.

The Public Transit Authority is performing a systemwide ridership analysis and data should be available in 1991 to evaluate ridership patterns. The outcome of this analysis may result in schedule improvement, route modifications and new routes to improve service in West Warwick and elsewhere.

Express Bus Service is provided by RIPTA Park-n-Ride starting at Quaker Lane and Centerville Road to Centerville Road and New London Avenue to the former Hills Home Center on Route 3 to the Park-n-Ride lot at Exit 7 on Route I-95 just southwest of the West Warwick corporate boundary in the Town of West Greenwich. Total trip time is 53 minutes. The fare is $1.50.

Local service is provided on RIPTA Route No. 13 which starts at the Francis Street terminal in downtown Providence, travels along Broad Street, Reservoir Avenue and Oaklawn Avenue to Providence Street, into Arctic on Main and Washington Streets, and onto the Washington section of Coventry. Total trip time is 51 minutes, but only 39 minutes from downtown Providence to Arctic. The fare from West Warwick to downtown is $1.25 per trip.

The Pawtuxet Valley Loop provides local service to West Warwick, Coventry and Warwick. The service only runs on Thursday and buses with wheelchair lifts are provided. This route serves housing for the elderly in the three towns and includes stops at Arctic Center, Kent County Hospital, the Warwick Mall and Rhode Island Mall. The route averages approximately 20 passengers per trip and 80 passengers per day. Because virtually all passengers are senior citizens who can ride fare free with their "senior pass", the route does not generate revenues for the Transit Authority. There are no plans to cut service in this route. Total trip time is 69 minutes.

Para Transit Service - The West Warwick Senior Citizens Center Inc. operates a minibus that seats 19 passengers and a van with a passenger capacity of 11. The center operates a regular route Monday, Tuesday, Thursday, and Friday from residential complexes to the senior center. The center also operates on a demand/response basis for shopping trips. In 1989, a total of 6,345 trips were provided by the senior center. The center is funded by a matching grant from RIDOT. There is no charge for the fare, although the center maintains a donation box on board for contributions.

SCRITS, Senior Citizens Integrated Rural Transit Services, operates in the Town, providing fare free service for senior citizens and the handicapped for medical and meal site trips. The service is not oriented to shopping trips. Some charter services are provided on weekends. The SCRITS operation has 8 to 9 vans providing transportation in the Kent County area, and one van with a passenger capacity of 14, operates on a nearly exclusive basis in West Warwick. In 1989, SCRITS provided 10,125 trips through arrangements with the senior center. Trips for purposes other than medical and meals have a fee structure of $1.50/round trip 7 miles or less and $3.00/round trip greater than 7 miles. Special fares are charged for special trips such as $3.00 for a trip to the Theatre by the Sea.

There is also an RSVP (Retired Seniors Volunteer Program) which furnishes transportation to senior citizens. This is not a para-transit operation per se, because it operates a van that is used to get senior volunteers to and from their volunteer job site. In Kent County there are more than 700 volunteers. The Kent County operation is funded by ACTION, the Federal Volunteer Agency and the local grantee is Warwick Community Action.

VIII.4 Trails and Pedestrian Walkways

There are limited trails and pedestrian walkways in West Warwick. Sidewalks are found in the Arctic Business District and elsewhere throughout town, however, a frequent complaint is the need for more sidewalks along the heavily travelled roadways. The lack of sidewalks forces pedestrians to walk either in the street or on frontage property. The lack of sidewalks deters pedestrian movement and influences individual trip decisions, especially for short neighborhood trips which can be accomplished on foot.

Trails are a completely different feature from sidewalks per se. There is a 1/4-mile trail along the North Branch of the Pawtuxet River. Known as the Phenix-Harris Walkway, the trail is built on the former railroad right-of-way and is used by bikers and joggers.

The Washington Secondary rail line which extends from Providence to Coventry has a total of 3.86 miles in the Town of West Warwick that could be used for a pedestrian walkway or trail

(see Figure VIII-3). It is a portion of a former rail spur off the Washington Secondary that forms the Phenix-Harris Walkway. Owned by the Providence and Worcester Railroad, the right-of-way has been proposed for abandonment. The State of Rhode Island Department of Transportation is currently performing a study of rail corridors in the state, including the Washington Secondary. There is potential to develop this line as a walkway and/or bikeway, and it will offer interesting and probably some spectacular views of the Town and the Pawtuxet River. It should be linked to the Phenix-Harris Walkway, River Point Park, the Trestle Trail in Coventry, the Arctic Business District and a historic walking tour in Town.

VIII.5 Municipal Parking

There are five municipal parking lots in the Arctic section of Town: (1) at the Municipal Offices off Legion Way; (2) on Washington Street adjacent to the Welfare Building; (3) on the corner of Archambault and Jocoin Streets; (4) opposite the Post Office on Main Street; and (5) at the Newberrys.

1. Legion Way - This parking lot has a capacity of approximately 150 cars. The lot serves the municipal employees at the Town hall, including police and fire and visitors. This lot is often overcrowded and parking spill-over occurs onto adjacent commercial parking lots. Land for additional parking lot development has been identified across Legion Way. Approximately one acre of land has been discussed to provide relief to the parking shortage at this location.

2. Washington Street - This lot has 45 parking spaces. It is striped and the pavement is in excellent condition. The edges are landscaped. The lot services the welfare building and cars are parked there by residents of an adjacent apartment building which apparently has inadequate parking space elsewhere.

3. Archambault Avenue - The Division of Motor Vehicles is serviced by this lot which has a capacity of approximately 100 cars. The lot is irregularly shaped and is not well striped, resulting in somewhat disorderly parking by customers.

4. Main Street - This lot is located behind a group of stores that share a common building. It is bounded by Weaver Street to the north and McElroy to the east. The pavement condition is fair but bumpy and striping is barely visible. The lot has a capacity of approximately 60 vehicles.

5. Newberrys - Responsibility for this lot is shared by the Town. The lot is clearly striped and holds approximately 50 cars. When other adjacent parking areas are taken into account, the area has a capacity of approximately 70 cars. The Newberrys lot is maintained by the store, except for Town maintenance of the landscaped edges.

VIII.6 Rail Facilities

The Washington secondary line of the Providence and Worcester (P & W) Railroad serves the Town of West Warwick. The line extends from the Conrail main line in Providence, passes through Cranston, a section of Warwick in the Natick neighborhood, and through West Warwick and into Coventry. The main line connects the following village centers in West Warwick: Natick, Westcott, Riverpoint, Arctic, and Crompton, and it terminates in the Washington section of Coventry. It skirts Arctic Hill, and a branch line at Riverpoint extends out to Phenix, Clyde and Harris and terminates in Coventry at Arkwright. This branch forms the Phenix-Harris Walkway.

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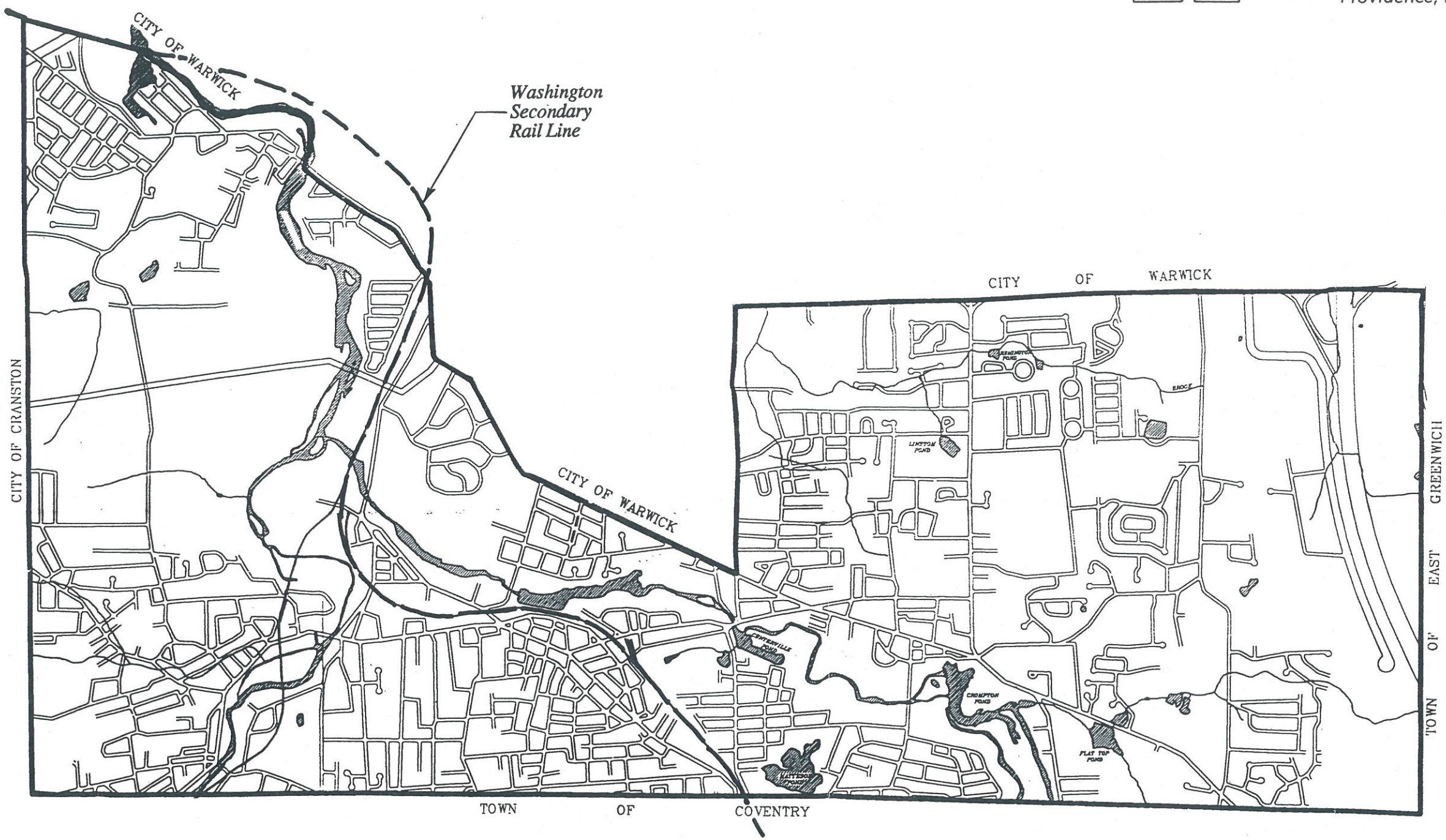

Source: Rhode Island Department of Transportation

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SECONDARY RAIL LINE

Figure VIII-3

Date:
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Scale: As Noted

Digital data provided by the R.I. Geographic Information System.

The P & W railroad received permission from the federal Interstate Commerce Commission (ICC) on June 9, 1990 to abandon the Washington Secondary. The approval stipulates that the property cannot be sold or transferred for 180 days after June 9, 1990.

The total length of rail line in West Warwick is approximately 3.86 miles. This right-of-way can be utilized for a bike path, such as the popular new East Bay Bikeway, retained for rail freight use or commuter rail service. Acquisition and development of the right-of-way as a bike path or a walk path by the state would be considered an interim use until it is needed for commuter rail or freight service. The Town supports the development of a bikeway.

There are no other rail/facilities in West Warwick. The Town is not serviced by regularly scheduled rail passenger service. The closest passenger terminal is the AMTRAK station at Providence. The Pontiac line which also branches off the Conrail main line and serves Cranston and Warwick, terminates in Pontiac section of Warwick. Sections of the line have been abandoned since the 1920's.

VIII.7 Bicycle Transportation

There are no bikeways in West Warwick. The bicycle has not developed as a transportation mode in West Warwick nor in Rhode Island. There is a trend, however, on the state level for more bicycle use on dedicated bikeways. This has been especially the case on the East Bay Bikeway in Barrington, Warren and Bristol, where recreational bicycle use has become very popular. The bikeway is also used for jogging and walking.

The Rhode Island Department of Transportation plans to extend the East Bay Bikeway to the East Side of Providence where it will connect with the Blackstone Valley Bikeway which is now being designed. The RIDOT is also conducting studies of bikeways on Block Island, in South Kingstown, Narragansett and North Kingstown. The primary focus of many of these facilities is former rail rights-of-way that have fallen into disuse as rail corridors. These rights-of-way are often ideal for dedicated bikeways. They are not, however, the only necessary component of a bikeway. The use of signing and striping on streets and roadways can also create a bikeway and when used in conjunction with a dedicated bikeway and used to connect recreation areas, parks, scenic areas, commercial centers and tourist attractions, a potentially very beneficial recreation and transportation feature can be added to a community.

As described in the rail facilities section, West Warwick is served by the Washington Secondary rail line that extends from Coventry through West Warwick, Warwick, Cranston and terminates in Providence. The development of this rail corridor as a bikeway and pedestrian facility should be seriously studied. It can become a major link in a statewide system that is evolving through the efforts of the Department of Transportation. A diagram of potential regional bikeway attractions is presented in Figure VIII-4.

VIII.8 Buildout Impact Traffic Analysis

The impact of buildout will be felt as a gradual increase in traffic on the community's street and road system. Because the buildout will occur over a period of decades, the increased traffic will occur incrementally. The increases will be noticed more in those sections of Town where the most significant amounts of developable land are located.

The total buildout prepared by Albert Veri & Associates, Inc. for the land use element will result in an additional 3,530 residential housing units. There will be additional commercial development on 23 acres and industrial development on 133 acres.

Traffic is a function of land use and traffic congestion can be caused by the density of development and the types of land use activities that are permitted. If the density of development is

intense or if the uses that are permitted are large traffic generators, and the transportation systems that service the uses are in some way limited, then traffic congestion is likely.

The Institute of Traffic Engineers (ITE) rates traffic generation according to major land use categories as shown in Table VIII-10. Single family detached housing generates the highest number of average weekday trips of all forms of residential development. West Warwick is predominately a community of single family residences, and the buildout analysis estimates that nearly 70 percent of the future residential development will be in the form of single family dwellings.

Office and retail uses generate a wide variety of traffic volumes depending upon the type of office or retail use and the gross floor space. Both can be heavy trip generators. Industrial land uses also vary in trip generation capacity depending on the type of industry.

Based on the available land and the buildout, an estimate can be made of new trip generation from the land use categories. Depending on the mix of commercial and industrial uses, an estimated total of 57,000 to 99,000 additional trips will be generated daily from the development of presently undeveloped land in West Warwick. This estimate is presented in Table VIII-9.

Table VIII-9
Estimated Additional ADT
Resulting from Buildout in the
Town of West Warwick

Type of Use	Number of Units	Trips per Unit	Total Trips
Residential Single Family	2,446	10.06	24,607
Two Family	266	6.60	1,756
3-4 Units	206	6.60	1,360
5-9 Units	128	5.86 - 6.60	750 - 845
10-49 Units	272	5.86 - 6.60	1,594 - 1,795
50+ Units	209	3.30 - 4.20	690 - 878
Business w/50 percent lot coverage	500,940 SF	24.39 - 94.71	12,218 - 47,444
Industrial w/50 percent lot coverage	2,896,740 SF	4.08 - 6.97	14,136 - 20,190
TOTAL			57,111 - 98,875

Source: Siegmund & Associates, Inc.

The trip generation analysis is based on the following considerations and assumptions:

- The rates of development for the three land use categories - residential, business, industrial - are those rates estimated in the Land Use Element.
- The number of new trips by each land use category is based on the Institute of Transportation Engineers (ITE) trip generation rates shown in Table VIII-10.
- The range of trips represents an estimate based on the simple fact that the future mix of development in the business and industrial zone cannot be predicted. Moreover, the exact mix of housing types in the multi-family residential zones is also not predictable.
- The estimated total of new trip generation has not been distributed on the state and local road network. This requires complex modelling which is beyond the current scope of work.

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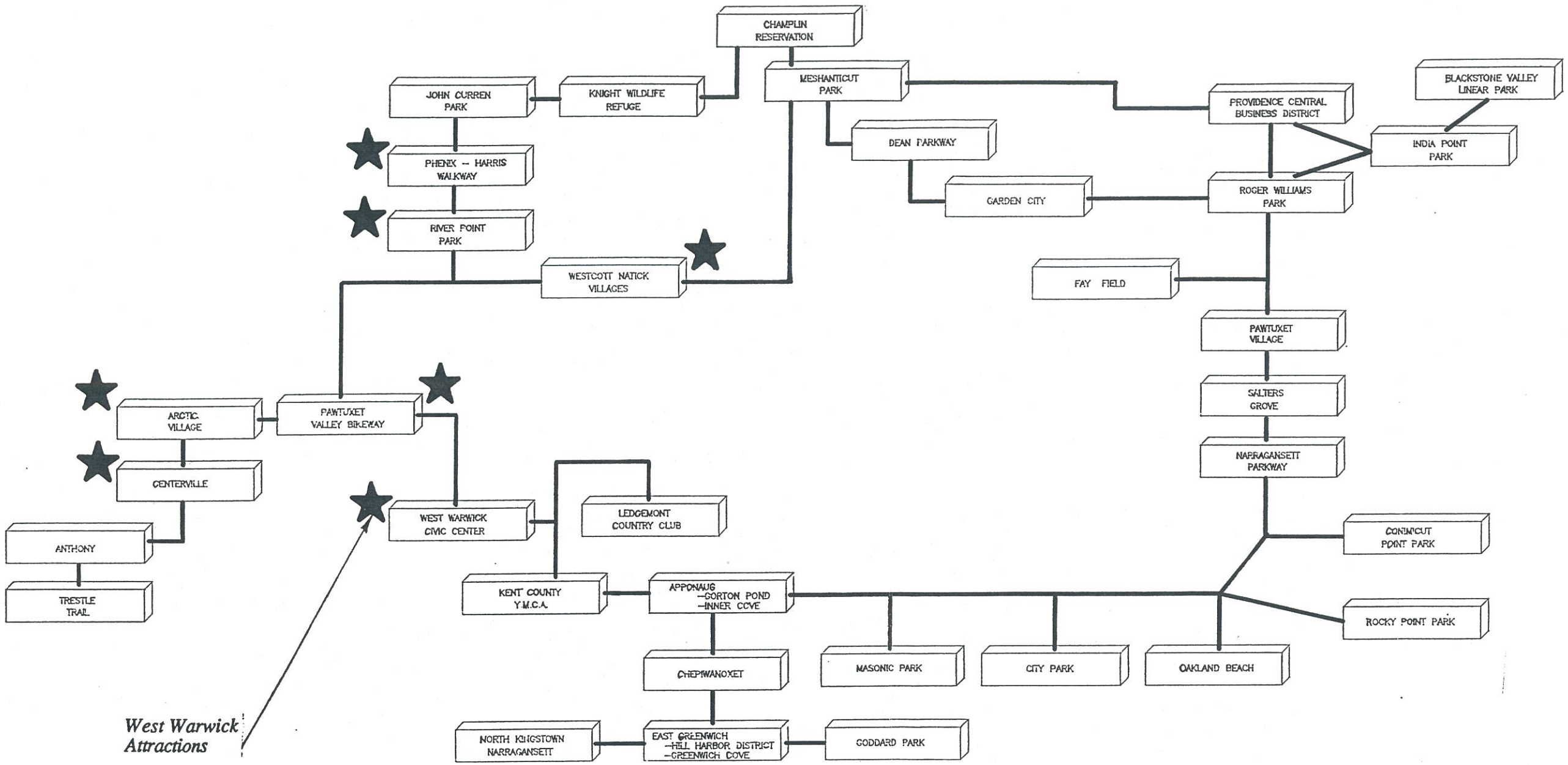

Source: Rhode Island Department of Transportation

Comprehensive Plan
West Warwick, Rhode Island

Albert Veri & Associates, Inc.
Community Planners
70 Elm Street
Providence, Rhode Island
401/274-1360 02903

POTENTIAL REGIONWIDE BIKEWAY ATTRACTIONS

Figure VIII-4

Date:
Drawn by:
Scale: As Noted

Digital data provided by the R.I. Geographic Information System.

- The volume of new trips can be accommodated by modes of transportation other than by auto, but the auto as the predominate mode of travel will be the preferred mode of transportation and therefore significant traffic impacts could occur at locations on the existing street and highway network.

  Because the largest available tracts of developable land are in the Crompton and Wakefield Hill areas, the new influx of trips will initially affect the street systems in these areas. Existing locations identified in Table VIII-3 will continue to experience traffic problems.

Table VIII-10
ITE Trip Generation Rates by Major Land Use Categories

Land Use Type	Average Weekday Trip Generation Rates
Residential	**Trips per Dwelling Unit:**
Single-family detached	10.06
Condominium/townhouse*	5.86
Low-rise apartment	6.60
High-rise apartment	4.20
Mobile home park	4.81
Retirement community	3.30
Recreational home (owner)	3.16
Office Building	**Trips per 1,000 gross sq. ft. of building area:**
General office, 10,000 gross sq. ft.	24.39
General office, 50,000 gross sq. ft.	16.31
General office, 100,000 gross sq. ft.	13.72
General office, 200,000 gross sq. ft.	11.54
General office, 500,000 gross sq. ft.	9.17
General office, 800,000 gross sq. ft.	8.16
Medical office building	34.17
Office park	11.40
Research center	6.09
Retail	**Trips per 1,000 gross sq. ft. of leasable area:**
Specialty retail	40.67
Discount store	71.16
Shopping center	
10,000 sq. ft. gross leasable area	166.35
50,000 sq. ft. gross leasable area	94.71
100,000 sq. ft. gross leasable area	74.31
200,000 sq. ft. gross leasable area	58.93
500,000 sq. ft. gross leasable area	39.81
1,000,000 sq. ft. gross leasable area	33.44
1,600,000 sq. ft. gross leasable area	31.05

Table VIII-10 cont.
ITE Trip Generation Rates by Major Land Use Categories

Land Use Type	Average Weekday Trip Generation Rates	Average Weekday Trip Generation Rates
Industrial	**Trips per Employee:**	**Trips per 1,000 gross sq. ft. of building area:**
Light industrial	3.02	6.97
Heavy industrial	2.05	1.50
Industrial park	3.41	6.97
Manufacturing	2.09	3.85
Warehousing	3.89	4.88
Mini-Warehouse	56.28	2.61
Lodging	**Trips per Employee:**	**Trips per Room:**
Hotel	14.34	8.70
Motel	12.81	10.19
Institutional	**Trips per Employee:**	**Trips per Student:**
Elementary school	13.10	1.03
High school	16.79	1.39
Junior/community college	10.06	1.55
Library	49.50	45.50 (per 1,000 gross sq. ft.)

Notes: * High-rise condominium (>2 stories) = 4.18
Source: Listokin and Walker, The Subdivision and Site Plan Handbook

There are several actions that the Town can take to eliminate or mitigate existing and projected traffic problems. These are:

- Carefully control the intensity of land uses along heavily travelled routes, minimize the number of new curb cuts and work to eliminate existing curb cuts by combining multiple access points when possible.
- Continue to improve traffic flow on the existing road network by working with the Rhode Island Department of Transportation to maintain, update and implement the Transportation Improvement Program.
- Consider the implementation of Development Impact Fees to assist in funding road improvements not funded by State Highway funds.
- Include bikeways in new and reconstructed road designs to allow for bicycle use on a neighborhood basis as well as on an intra town and regionwide basis.
- Improve pedestrian access to neighborhood activities to reduce automobile dependency.
- Control development densities and the intensity of land use activities through zoning and the preservation of open space, and require traffic impact studies for all new major development.

VIII.9 Goals, Policies and Implementation Actions

VIII. Circulation Goals	Policies	Implementation Actions
1. To provide West Warwick with a safe, convenient, integrated full service transportation system sufficient to meet the daily travel needs of the Town's residents and to furnish access to local and statewide business and industry and to the regional transportation network.	a. Community-wide project costs and benefits will be considered during the planning and design of transportation projects.	
	b. Major transportation improvements will be evaluated in terms of their potential social, cultural, economic and environmental impacts.	
	c. Appropriate traffic safety measures will be enacted and enforced.	
	d. Require high aesthetic quality in transportation system and project design by visually relating design and location of facilities to the natural and cultural landscape, particularly in areas of historical, cultural and environmental sensitivity.	
2. Provide a network of state and local streets and roadways that are well-maintained, safe, convenient, uncongested and pleasant to travel on to enhance the Town's image and its commerce.	a. Annually review and evaluate the road and highway needs of the Town, utilizing existing data bases and developing new data bases as needed, and considering departmental requirements as identified by the Town Planner, the Town Engineer, the Department of Public Works and others concerned about the condition of neighborhood streets, access to recreational, commercial and industrial land and facilities, and other activities throughout the Town.	1. Develop and implement a computerized pavement management system to identify and prioritize maintenance and capital improvements for local roads and associated drainage structures, and to coordinate roadway maintenance and improvement projects with other infrastructure improvements.

VIII. Circulation Goals	Policies	Implementation Actions
		2. Work with the Rhode Island Department of Transportation to expedite the Transportation Improvement Program (TIP) projects programmed for West Warwick. In addition to the current TIP, projects recommended for inclusion in the TIP are improvements to: (1) Route 3 from Route 2 to Coventry Town line; (2) East Greenwich Avenue; (3) Greenbush Road; (4) New London Avenue; (5) Main Street from Legion Way to Coventry; and (6) Route 117 from New London Avenue to the Warwick city line.
		3. Improve circulation of traffic on Highland Street and at the intersection of Highland Street, Main Street and Phenix Avenue.
		4. Improve local streetscapes through the use of curbing, street tree planting, vegetative buffer strips, repaired and new sidewalks, and drainage improvements.
		5. Require a complete curb to curb overlay of disturbed pavement areas when utilities are installed for new development and when utility repairs and improvements are routinely performed on local streets. This overlay will extend a minimum of five feet beyond either end of the limit of disturbance.
		6. Resolve, through the Town Planner's office and the State Department of Transportation, the issue of maintenance responsibility for Bridge Number 514, the Francis L. LaChapelle Bridge on Factory Street crossing the South Branch of the Pawtuxet River, and initiate plans for the maintenance and repair of the structure.
		7. Work with the Rhode Island Department of Transportation to identify bridges in need of repair so that the Town and state can share design and construction responsibilities.
		8. Identify, through the Town Planner's office, bridges with weight limit problems and prepare and implement a repair program.

VIII. Circulation Goals	Policies	Implementation Actions
		9. Prepare a five year capital improvements program with an implementation element that is updated annually for street, roadway, sidewalk and drainage improvements.
		10. Establish a traffic safety committee to address safety, signage and other traffic and circulation-related issues as needed.
3. To provide public transportation as a viable alternative to the automobile to serve those citizens without automobiles, to help reduce traffic congestion, reduce transportation energy consumption, and to reduce air pollution impacts.	a. Work with the Public Transit Authority, the Department of Transportation and the Office of State Planning to maintain and improve where possible public transportation for West Warwick.	1. Encourage the Rhode Island Public Transit Authority to conduct a ridership study to determine where service improvements can be made through modifications to headways, route modifications and new routes.
		2. Encourage the Rhode Island Public Transit Authority to establish on a pilot project basis, improved bus service throughout West Warwick and from the area's Park-n-Ride parking lots.
4. To provide transportation service to the elderly and the handicapped for whom the use of the automobile and fixed route public transportation is not feasible for trips relating to meals, health care and other necessary services.	a. Review and evaluate the needs of the service population and the levels of service obtained through provider organizations to assure that needs and requirements are met.	1. Continue to furnish demand-response minibus transportation services to eligible elderly and handicapped citizens through the West Warwick Senior Center.
		2. Expand the availability of transportation service to people in need who currently do not meet eligibility requirements.
		3. Continue to coordinate the service delivery between vendors at the West Warwick Senior Center, RSVP and SCRITS to prevent duplication of service.

VIII. Circulation Goals	Policies	Implementation Actions
5. Enhance access to municipal offices and commercial businesses in the Arctic Business District through a system of strategically located and well-maintained and operated public parking lots.	a. Work with governmental offices and commercial businesses to establish a list of parking needs priorities and to develop a plan of action to satisfy parking demand.	1. Maintain and improve the municipal parking facilities by repaving those lots with poor surfaces, striping as needed and by improving signing to the lot and to local businesses, furnishing adequate lighting and attractive landscaping including trees, and improving drainage as necessary.
		2. Regularly clean the municipal parking lots and groom the landscaping to keep them attractive to users, and provide timely snow removal during the winter.
		3. Identify funding sources and potential parcels for the development of public parking on Brookside and Washington Streets in Arctic.
6. To make West Warwick a community with safe and efficient pedestrian access and safe road design in village neighborhoods, suburban developments and in village centers, and promote tourist and recreational activities through improved pedestrian facilities.	a. Include in the design of new development, redevelopment and the expansion of development projects landscaped and functionally workable pedestrian access within the development and to adjacent areas.	1. Provide greater emphasis on the design and construction of sidewalks for all new and rehabilitated roadways.
		2. Encourage the design and construction of paved sidewalks on Wakefield Street and East Greenwich Avenue.
		3. Establish and enforce traffic controls through Arctic Center to facilitate pedestrian movement from place to place, and evaluate the benefits to be derived from consolidating the crosswalks at locations with the greatest pedestrian movement.
		4. Develop and install directory signing along the streets and at municipal parking lots to assist pedestrians, locate activities, points of destination and significant landmarks.

VIII. Circulation Goals	Policies	Implementation Actions
		5. Investigate the potential for establishing a walking tour route through the Town of West Warwick and Arctic Center as part of a larger tourism development program.
		6. Improve pedestrian access to and along the Pawtuxet River and investigate the potential for developing a network of walkways utilizing Town streets, the Phenix-Harris River Walk, and the Washington Secondary rail right-of-way.
7. Preserve rail rights-of-way for rail revitalization or other reuse for the public good.	a. Support the redevelopment of rail facilities for the purposes of transportation, economic development, or other viable and appropriate uses as determined through adequately prepared studies, plans and designs.	1. Work with the communities of Cranston, Coventry and Warwick, and the State of Rhode Island to preserve the Washington Secondary rail right-of-way and to investigate alternative uses for the facility, including a bicycle path and a pedestrian trail.
8. Develop bicycle transportation and related facilities to provide a viable alternative mode of travel for local trips and with regional connections where possible to help eliminate traffic congestion, to improve air quality and public health, and to help reduce transportation energy consumption.	a. Support the design of bicycle facilities and bike routes, including exclusive bikeways, where feasible in all public and private plans to construct new or improved roads and highways and for land development.	1. Prepare a bicycle path master plan for the Town of West Warwick connecting recreational, commercial, historical and natural resource attributes of the Town.
		2. Coordinate the bicycle route plan with regional plans, activities and facilities in Coventry, Cranston, East Greenwich, Warwick and Scituate and consider the use of the Washington Secondary rail right-of-way as the primary segment for the bikeway in West Warwick.

VIII.10 Sources

1. Rhode Island Department of Transportation, "Turning Movement Report," April 16, 1990.

2. Rhode Island Department of Transportation, "Special Count Report, Selected Date Items," April 16, 1990.

3. Rhode Island Department of Transportation and U.S. Department of Transportation, Federal Highway Administration, "State Highway Map of Rhode Island, Traffic Flow Map, 1989 Annual 24 Hour Average Daily Traffic.

4. Rhode Island Department of Transportation, Planning Division, "Five Year Summary of Accident Data, 1984-1988."

5. Rhode Island Department of Transportation, Planning Division, "Five Year Summary of Fatal Accidents by Community, 1984-1988."

6. Rhode Island Department of Transportation, Planning Division, "Five Year Summary of Accidents by Community, 1984-1988."

7. Rhode Island Department of Transportation, Planning Division, "Five Year Summary of Injury Accidents by Community, 1984-1988."

8. Rhode Island Department of Transportation, Planning Division, "Five Year Summary of Property Damage Accidents by Community, 1984-1988."

9. Rhode Island Department of Transportation, Planning Division, "Five Year Summary of Fatalities by Community, 1984-1988."

10. Rhode Island Department of Transportation, Planning Division, "Five Year Summary of Injuries by Community, 1984-1988."

11. Rhode Island Department of Transportation, Planning Division, "Motor Vehicle Accident Report Details, 1986-1988."

12. Rhode Island Public Transit Authority, The Complete Bus Map, December, 1985.

13. Rhode Island Department of Transportation, Highway Improvement Program and Plan, 1987.

14. Rhode Island Department of Administration, Division of Planning, Development of the Year 2010 Travel Demand Forecast, Technical Paper Number 138, September, 1989.

15. Rhode Island Department of Administration, Division of Planning, Transportation Improvement Program for the State of Rhode Island, October 1, 1989 to September 30, 1985, September 14, 1989.

16. Rhode Island Transit Authority Ridership Data and Scheduling, Office of Planning and Marketing various Telecom.

17. Alpha Research Associates, Inc., An Assessment of Public Attitudes in the Town of West Warwick, for Albert Veri & Associates, May/June, 1990.

18. Mr. Bernard Magiera, Director of Public Works (Retired).

19. Ms. Joanne Arruda, Chief of Operations, Town of West Warwick Department of Public Works.

20. Mr. John O'Hare, Town Planner (Retired).

21. Ms. Sue Pelkey, SCRITS.

22. RSVP, Warwick Community Action Agency.

23. Ms. Carol Theroux, Administrative Assistant, West Warwick Senior Citizens Center, Inc.

24. Providence Journal, "Mayors see path less traveled as bikeway", July 3, 1990.

25. Mr. John Vorro, R.I. Department of Transportation.

26. Mr. Edmund T. Parker, Deputy Assistant Director, Transportation/ Public Works, R.I. Department of Transportation.

27. Rhode Island Division of Planning, Department of Administration, Monthly Progress Report, Report Number 310, June 1990.

28. Rhode Island Department of Transportation, Comprehensive Bridge Improvement Plan, March, 1990.

29. Rhode Island Division of Planning, Highway Functional Classification System for the State of Rhode Island 1995 - 2005, October 1988.

30. Mr. James Chaput, Town Planner.