

7 Transportation

A transportation system supports the growing economy of a community, which provides opportunities for its residents and visitors. These opportunities enhance the community's standard of living. Of particular importance in smaller communities is the local road system, since it generally has the greatest direct input and investment by the local government.

A well-designed road system can result in many benefits and long term cost savings for a community. Being an integral aspect of the town, it plays a major role in the efficiency, safety and overall desirability of the community as a place to live and work.

7.1 Existing Road Systems

In analyzing the road system, several aspects and factors should be examined to discern possible shortcomings as well as plan for future needs. Analysis of traffic patterns through the examination of the road system, review of traffic counts, study of accident reports, discussion with individuals at the local, county and state levels, and finally, a field survey of the roads can assist in providing possible recommendations relevant to the system.

To begin the analysis for the Town of Washington, an examination of the existing configuration or pattern of the road system is in order. As Map 7-1 depicts, the town's road configuration does not follow the typical rural roadway pattern of primarily north-south and east-west roads. Rather, the abundance of natural features within the town, including its many lakes, creeks, and forested areas tend to direct roadway patterns.

The road system is composed of three levels of government jurisdiction. These include the town system encompassing the local roads, the County system of trunk highways, and the State and Federal highway systems. Map 7-1 identifies the existing road patterns. The map illustration identifies that the local roads comprise the greatest mileage. However, in terms of the functional role and the amount of traffic carried by each type, USH 45/STH 32, STH 17 and STH 70 are the most significant.

7.2 Classifications

The three levels of jurisdictional roadway, State and Federal, County, and Local, often times are considered to approximate the functional classification of roads used for planning and design purposes. The division of roadways into the functional classes, arterials and collectors, represents a breakdown relative to the principal service the roadway is intended to serve. The functional classification is generally the basis of funding, constructing, and maintaining the various levels of roadway. This classification for rural areas often results in the use of the state and federal roads as arterials, while county and town roads serve as collectors within the system (see Map 7-1).

Although the definitions are somewhat formal, they attempt to explain the principal role of each type of roadway. While the four classes appear to be set apart, the sharp distinctions are actually more subtle. For discussion and planning purposes, however, these more specific definitions are applied.

Principal Arterial (Freeways)

The principal function is to provide the most efficient movement for relatively large volumes of traffic at increased speeds. Movement to and from other road facilities is limited to controlled interchanges. Regional movement of traffic contributes an increasing portion of the traffic counts.

Minor Arterial

The principal function is to provide efficient traffic movement for larger volumes of traffic. Little or no direct access is strived for with non-local destinations comprising a major portion of the traffic.

Major Collector

The principal function is to provide an intermediary link between efficient movement of arterials and accessibility of local roadways. They serve to funnel or collect traffic from local roadways to arterials. More efficiency of movement is strived for in favor of accessibility.

Minor Collector (Local Roadways)

The principal function is to provide traffic with access to and from property. It is the grass roots classification where accessibility for vehicles and pedestrians is emphasized and efficiency of movement is secondary.

As previously noted, these functional classifications are generally equated with the jurisdictional divisions. In the more developed, larger urban communities, this relationship may not be as rigid, since the local community constructs and maintains all classes of the roadway system. In the typical rural transportation system, however, the jurisdictional and functional classifications maintain a closer relationship. The greatest emphasis of traffic in rural areas is generally on non-local efficient movement whereas local access is secondary due to relatively low population densities.

Based on the qualifications of the roadway classifications, the Town of Washington has the service of 1 principal arterial, 1 minor arterial, 5 major collectors and 1 minor collector. USH 45/STH 32 is a principal arterial. STH 70 is a minor arterial. STH 17, Military Road, Butternut Lake Road, Range Line Road and Chain O'Lakes Road are major collectors. East Dollar Lake is a minor collector.



Transportation Map for the Town of Washington

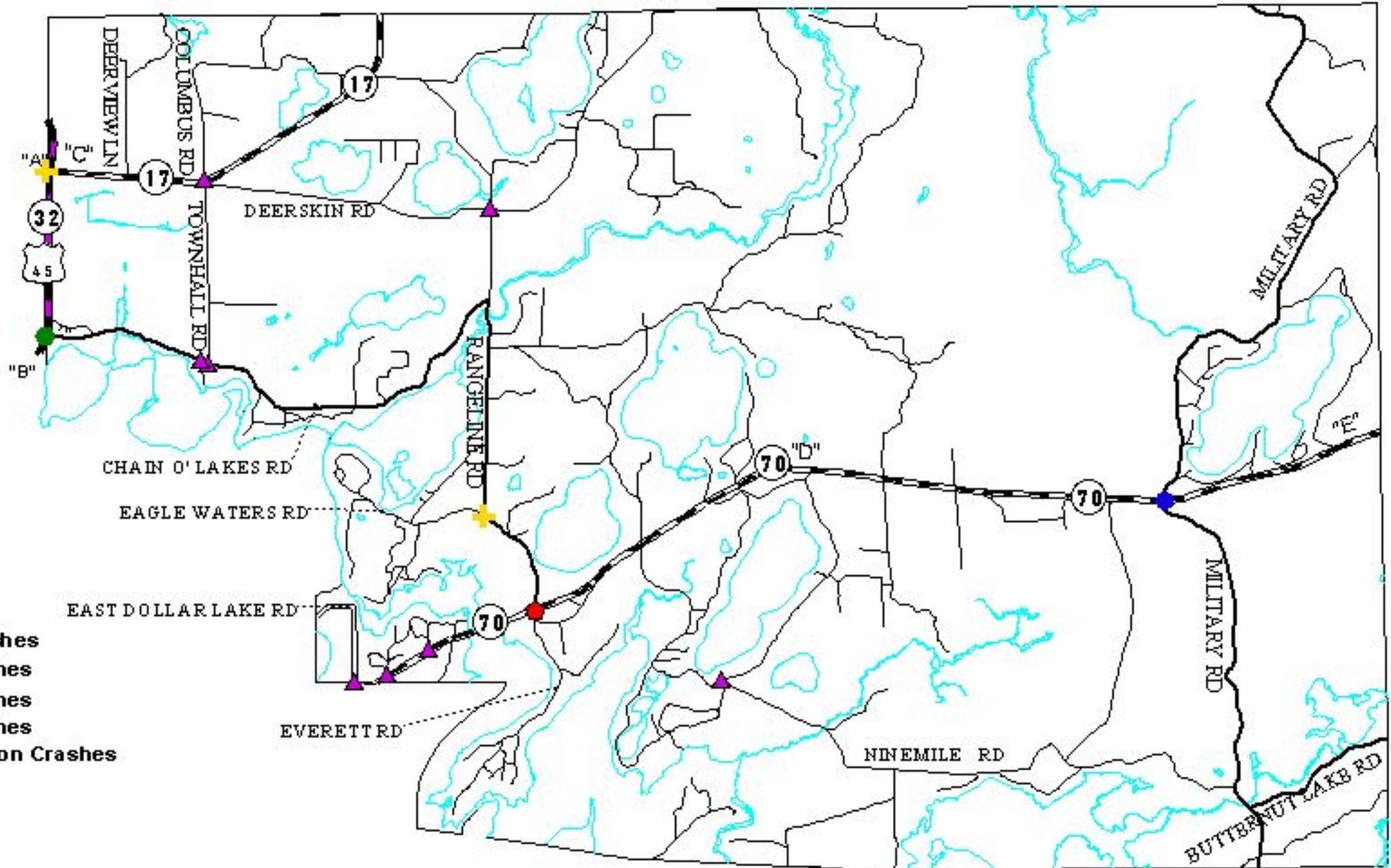
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MAP 7-1



Wisconsin Department of Transportation

Vilas County UW-Extension 1/20/01



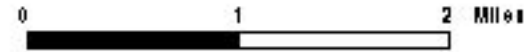
Crashes

- + 11 Intersection Crashes
- 8 Intersection Crashes
- 6 Intersection Crashes
- 4 Intersection Crashes
- ▲ 3 or Less Intersection Crashes

Roads

- Principal Arterial
- Minor Arterial
- Minor Collector
- Major Collector
- Local Road
- Surface Waters
- Town Border

"A" Traffic Count Locations



To further assist in the classification of roads within the roadway system, the following table identifies the basic criteria used to determine the functional class of each road within a community. (See Table 7-1, Year 2010 Rural Area Highway Functional Classification Criteria.)

7.3 Traffic Counts

Annual average daily traffic counts (AADT's) for 1989, 1992, 1995 and 1998 for five locations in Washington are presented in Table 7-2. In addition, the change in annual average daily traffic counts from 1989 to 1998 was calculated. These five locations can be reviewed on Map 7-1.

**Table 7-2
Annual Average Daily Traffic Counts
Town of Washington
1989-1998**

| Location | 1989 | 1992 | 1995 | 1998 | %Change | #Change |
|--------------------------------------|-------|-------|-------|-------|-----------|-----------|
| | | | | | 1989-1998 | 1989-1998 |
| A USH 45-STH 32 north of STH 17 | 2,590 | 2,520 | 4,800 | 2,400 | -7.3 | -190 |
| B USH 45-STH 32 south of STH 17 | 4,890 | 6,110 | 7,400 | 8,300 | 69.7 | 3,410 |
| C STH 17 north of USH 45-STH 32 | 1,440 | 2,050 | 3,154 | 2,800 | 94.4 | 1,360 |
| D STH 70 4.0 miles west of Forest Co | 3,690 | 2,040 | 2,127 | 2,100 | -43.1 | -1,590 |
| E STH 70 0.5 miles west of Forest Co | 583 | 900 | 1,149 | 1,300 | 123.1 | 717 |

Source: Wisconsin Dept. of Transportation

As expected, the highest daily traffic volumes in the four reference years are found on the principal arterial USH 45-STH 32 south of STH 17 at location "B" (8,300). The largest increase in volume from 1989 to 1998 occurred along USH 45-STH 32 south of STH 17, recording an additional 3,410 motor vehicles. STH 17 north of USH 45-STH 32 also experienced a large increase in volume from 1989 to 1998, recording an additional 1,360 motor vehicles. STH 70 at location "D" experienced a significant decline in volume of 1,590 vehicles.

Table 7-3 shows the projected Annual Average Daily Traffic Counts from base year 1998 to forecasts year 2019. The largest volume increase is projected to occur on USH 45-STH 32 north of STH 17, with an additional 5,500 motor vehicles. USH 45-STH 32 south of STH 17 is also projected to increase

from 1998 to 2019, by an additional 3,800 motor vehicles.

Table 7-1
Year 2010 Rural Area Highway Functional Classification Criteria

| Functional Classification | Traffic Volume | Basic Criteria | | | Supplemental Criteria or must meet both of these plus 90% of traffic volume. |
|---------------------------|------------------|--|--|------------------|---|
| | | Must meet any two of these or the parenthetical traffic volume alone. | | | |
| | | Population Service | Land Use Service | Spacing | |
| Principal Arterial | >3,000 | Connect places 50,000 with other places 50,000. Connect places 5,000 with places 50,000. | Provide access to 12 large attractions | Maximum 30 miles | None for Principal Arterials |
| Minor Arterial | >1,000 | Connect places 5,000 with other places 5,000. Connect places 1,000 with places 5,000 or with principal arterials | Serve all traffic generating activities with an annual visitation 300,000 if not served by a principal arterial | Maximum 30 miles | 1. Alternative population connection. 2. Major river crossing restrictive topography. |
| Major Collector | >500 (>2,000) | Connect places 1,000 with other places 1,000. Connect places 500 with places 1,000 or higher function route. Connect places 500 with other places 500 or higher function route. Connect places 100 with places 500 or higher function route. | Land use service index \geq 16. Provides access to smaller attractions (i.e., airports, schools factories, parks, etc.) | Maximum 10 miles | 1. Alternate population connection. 2. Major river crossing. 3. Restrictive topography. 4. Interchange with freeway. 5. Parallel to a principal arterial. |
| Minor Collector | >200 (>800) | Connect places 100 with other places 100. Connect places 50 with places 100 or higher function route. | Land use service index \geq 8. Serves same type of attractions as major collector. | Maximum 10 miles | 1. Alternative population connection. 2. One major river crossing. 3. Restrictive topography. 4. Interchange with freeway. 5. Parallel to a principal arterial. |

Source: Wisconsin Department of Transportation.

Table 7-3
Projected Annual Average Daily Traffic Counts
Town of Washington
1998-2019

| Location | 1998 | 1999 | 2009 | 2019 | %Change | #Change |
|--------------------------------------|-------|-------|--------|--------|-----------|-----------|
| | | | | | 1998-2019 | 1998-2019 |
| A USH 45-STH 32 north of STH 17 | 2,400 | 5,500 | 6,800 | 7,900 | 229.1 | 5,500 |
| B USH 45-STH 32 south of STH 17 | 8,300 | 8,400 | 10,400 | 12,100 | 45.8 | 3,800 |
| C STH 17 north of USH 45-STH 32 | 2,800 | 2,810 | 3,530 | 4,210 | 50.4 | 1,410 |
| D STH 70 4.0 miles west of Forest Co | 2,100 | 2,130 | 2,230 | 2,330 | 11.1 | 230 |
| E STH 70 0.5 miles west of Forest Co | 1,300 | 1,200 | 1,480 | 1,750 | 34.6 | 450 |

Source: Wisconsin Dept. of Transportation

7.4 Crash Locations

To further analyze the Town of Washington's road system, the frequency, location of, and causes of motor vehicle crashes can be used to identify problem areas. The frequency of motor vehicle crashes tends to correlate directly with traffic volumes, however the design and condition of the road may also have an impact on the crash rate. Table 7-4, Motor Vehicle Crash Summary, displays the number of crashes for roads, which have experienced three or more motor vehicle crashes from 1991 to 1998 as reported by the Department of Transportation, Division of Motor Vehicles. The "other" category includes all other crashes from locations that individually had less than three motor vehicle crashes from 1991 to 1998

The Town of Washington had 474 motor vehicle crashes from 1991 to 1998. As expected, the roadways with the greatest traffic volumes (STH 70, USH 45 and STH 17) also had the greatest number of motor vehicle crashes. Figure 7-1 identifies the overall percentage of motor vehicle crashes experienced within Washington between 1991 and 1998 by location.

State Trunk Highway 70 experienced 31% of the total number of motor vehicle crashes between 1991 and 1998. USH 45 was the location of 25% of the town's motor vehicle crashes. State Trunk Highway 17 was the location of 11% of the town's motor vehicle crashes. As for local roads, the greatest number of traffic crashes occurred on Range Line Road, which experienced 9% of the total town's motor vehicle crashes. Chain of Lakes Road experienced 8% of the town's motor vehicle crashes. Deerskin Road experienced 5% of the town's motor vehicle crashes. Shangrila Road and Military Road experienced 3% each of the motor vehicle crashes in the Town of Washington.

**Table 7-4
Motor Vehicle Crash Summary
Town of Washington
1991-1998**

| Crash Location | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | Total |
|---------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
| USH 45 | 10 | 13 | 8 | 12 | 20 | 10 | 12 | 11 | 96 |
| STH 70 | 5 | 6 | 8 | 24 | 20 | 26 | 22 | 9 | 120 |
| STH 17 | 4 | 5 | 2 | 8 | 4 | 2 | 12 | 5 | 42 |
| Chain of Lakes Road | 3 | 2 | 4 | 4 | 4 | 10 | 2 | 3 | 32 |
| Range Line Road | 6 | 3 | 2 | 6 | 6 | 8 | 4 | 0 | 35 |
| Deerskin Road | 0 | 2 | 2 | 2 | 0 | 6 | 4 | 3 | 19 |
| Shangri Lane Road | 1 | 1 | 1 | 0 | 6 | 2 | 2 | 0 | 13 |
| Columbus Road | 2 | 3 | 3 | 6 | 2 | 0 | 0 | 2 | 19 |
| Military Road | 1 | 1 | 1 | 6 | 2 | 0 | 0 | 2 | 13 |
| Nine Mile Road | 0 | 1 | 0 | 4 | 0 | 0 | 2 | 1 | 8 |
| Catfish Lake Road | 2 | 0 | 0 | 2 | 2 | 0 | 0 | 1 | 7 |
| Everett Road | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 4 | 7 |
| Eagle Waters Road | 0 | 2 | 2 | 0 | 0 | 2 | 0 | 0 | 6 |
| East Cranberry Lake Road | 3 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 6 |
| Tyson Road | 1 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 5 |
| North Carpenter Lake Road | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 5 |
| West Carpenter Lake Road | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 4 |
| East Bass Lake Road | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 4 |
| Other* | 1 | 2 | 4 | 4 | 12 | 8 | 2 | 0 | 33 |
| Total | 42 | 44 | 40 | 82 | 84 | 74 | 66 | 42 | 474 |

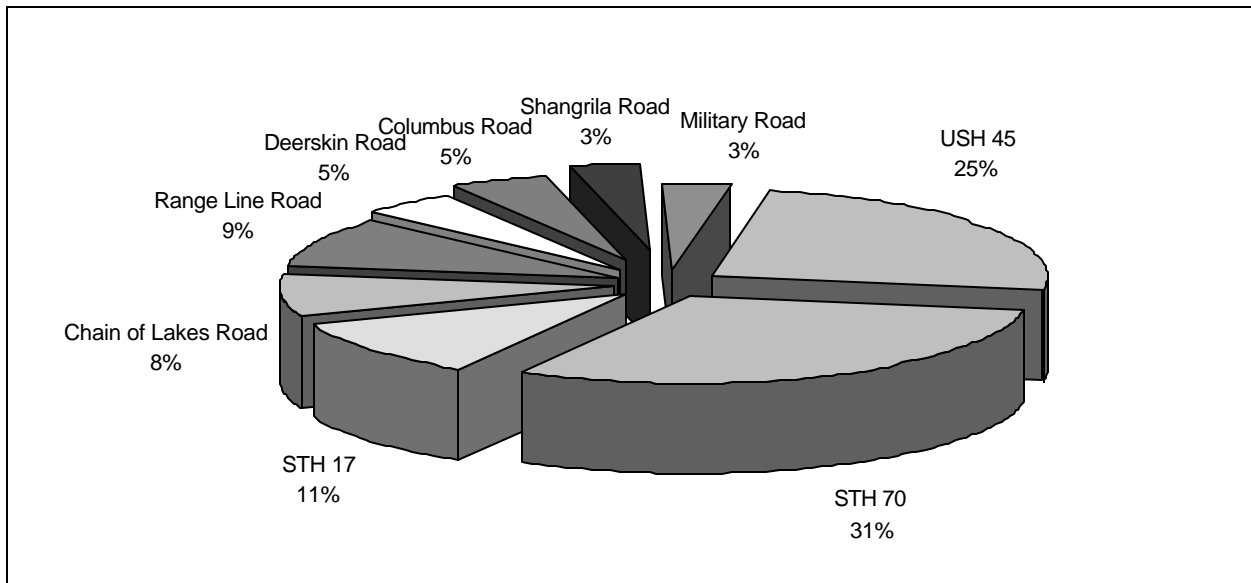
*Note: Denotes all locations with three or less crashes from 1991-1998.

Source: Wisconsin Department of Transportation, Crash Listing, 1991-1998.

In addition to analyzing the number of crashes per roadway, a review of the trends for intersection motor vehicle crashes can provide insight to problem areas within the town roadway system. Map 7-1 displays the locations of intersection crashes from 1991-1998. The intersections are classified by location and number of crashes, which range from one to eleven. The intersections of USH 45 and STH 17 and Range Line Road and Eagle Waters Road had eleven crashes during the period between 1991 and 1998. The intersection of USH 45 and Chain of Lakes Road had eight crashes. The intersection of STH 70 and Range Line Road had six crashes. The intersection of STH 70 and Military Road had four crashes. The other intersections illustrated on Map 7-1 experienced three or

fewer crashes during this time frame. It should be understood, however, that roadways with greater volumes of traffic have an increased risk of crashes, which is the case for the above-mentioned roadways.

Figure 7-1
Percent of Total Crashes by Location
Town of Washington

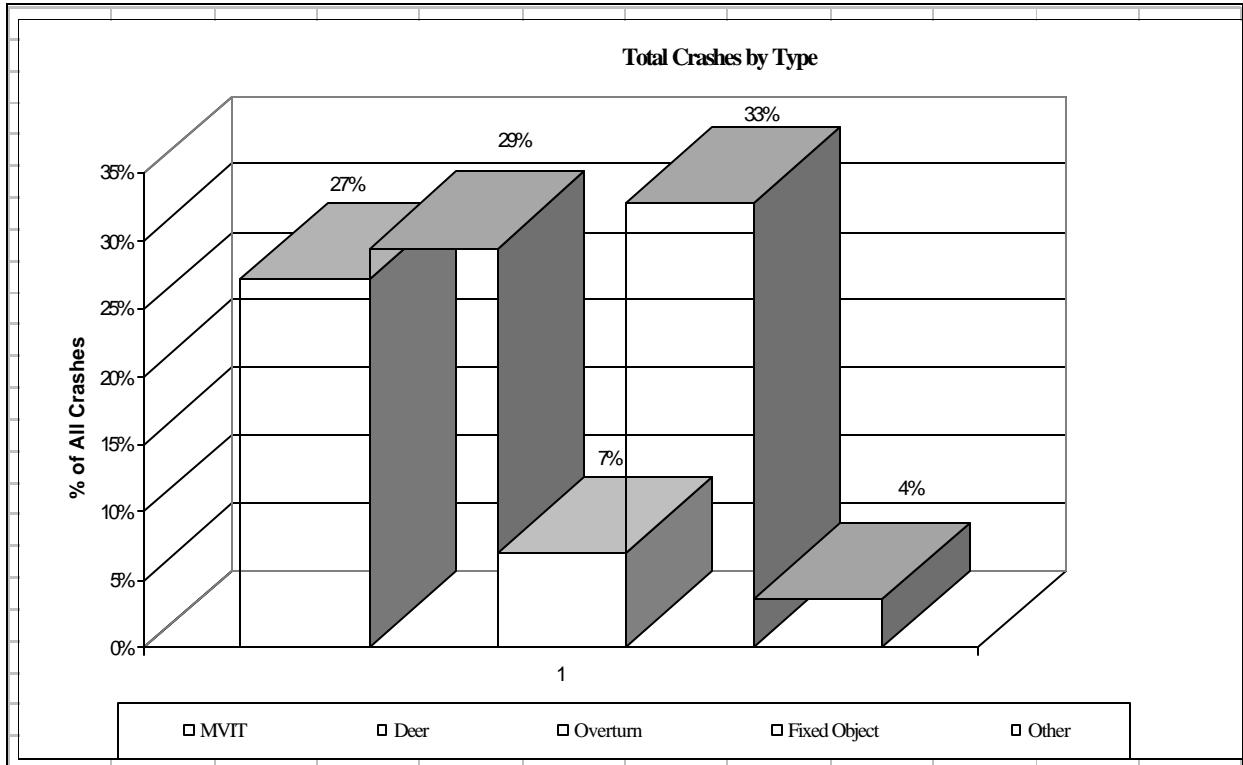


Source: Wisconsin Department of Transportation

Further analysis of motor vehicle crashes by type of crash provides greater detail into the cause of motor vehicle crashes within the Town of Washington. Figure 7-2, Total Crash by Type, displays the types of crashes from 1991 to 1998.

According to Figure 7-2, the greatest attributable cause, or type of crash, from 1991-1998 was the category Fixed Object, which comprised 33 percent of all crashes in the town. Fixed Objects include trees, ditches, utility poles, traffic signposts and mailboxes. The second most common crash type was Deer, which accounted for 29 percent of all crashes in the town. Motor Vehicle in Transit (MVIT) was the third most common crash type, and accounted for 27 percent of all crashes in the town. Overturn comprised 7 percent of all crashes in the town, while the category Other comprised 4 percent. This category includes objects on the road, objects not fixed, parked vehicles and animals other than Deer.

**Figure 7-2
Total Crashes by Type
Town of Washington
1991-1998**

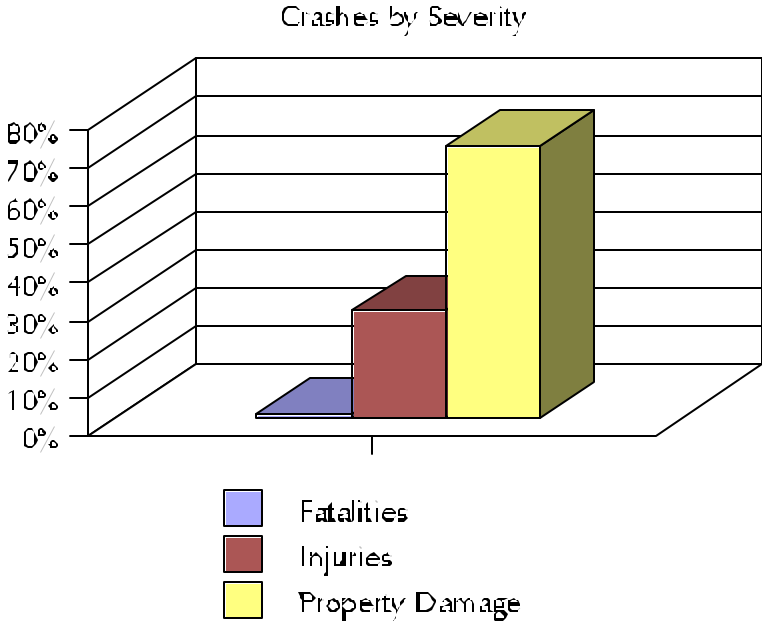


Source: Wisconsin department of Transportation

The severity of the crashes is also a concern in determining if roadway conditions contributed to fatalities or injuries. Figure 7-3 displays the severity of all motor vehicle crashes from 1991 to 1998.

Figure 7-3 displays that the greatest portion of all crashes (71%) result in property damage to the vehicle(s) involved. Injuries occurred among 28% of all crashes from 1991 to 1998. Fatalities occurred in 1% of all motor vehicle crashes within the Town of Washington between 1991 and 1998.

**Figure 7-3
Severity of Motor Vehicle Crashes
Town of Washington
1991-1998**



Source: Wisconsin Department of Transportation

7.5 Existing Street Conditions

To assess the condition of the town's roadways, Town Board members conduct an annual "road workshop". The workshop consists of the board members performing a visual assessment of all the town roads, during which all repairs, maintenance, etc. that are observed to be needed are identified. After completion of the visual assessment, the board members reconvene at the Town Hall to prioritize the work to be completed based on their observations.

7.6 Air Transportation

Air services available to the Town of Washington residents include the facilities in Eagle River and Rhinelander. Eagle River Union Airport is located just west of the town in the City of Eagle River. This facility provides seasonal air passenger service. The airport is classified as a Transport/Corporate airport.

Rhineland-Oneida County airport is located about 30 miles south of the town. This facility is classified as an Air Carrier/Air Cargo airport. Regularly scheduled commercial air service is available to Town of Washington residents. The airport provides two commercial airline carriers: Great Lakes and Mesaba Air. These two commercial carriers offer commuter flights to three Midwest airports including those located in Detroit, Michigan; Minneapolis, Minnesota; and Chicago, Illinois. The total commercial passenger traffic for the Rhineland/Oneida County Airport for 1998 was 79,000 persons. Airport administration estimates 2000 air traffic to reach or surpass 92,000 persons, and projects future flight volumes to continue to increase. Additional passenger services at the airport include private air charters through the Rhineland Flying Service.

7.7 Rail Transportation

Railroad facilities do not exist in the Town of Washington. The nearest railroad is Wisconsin Central Limited located in Rhineland and Argonne; both facilities are approximately 30 miles south of the town.

7.8 Planned Transportation Improvements

State Highway Projects

The Wisconsin Department of Transportation indicated that to date, there are no proposed state highway improvements/projects upcoming within the Town of Washington.

On a general basis, however, the transportation district in which Washington is included has allocated funds for district wide special pavement marking and bridge approach slabs to occur by the year 2003.

County Highway Projects

The Vilas County Highway Commission indicated that there is a surface reconstruction project scheduled for FY2001 on Everett Road Northeast in the Town of Washington.

7.9 Transportation Recommendations

Based on the information presented in this chapter, several recommendations are provided to the town to improve its transportation system.

- ◆ The town should initiate a Pavement Management System, which is simply a Capital Improvement Program geared specifically to the town's roads. The implementation of a more "formalized" technique would allow for more effective pavement management. In addition, it would provide the town with a detailed, defensible document to assist in making

informed decisions regarding road maintenance and repair. The pavement management system should include the following:

- ▶ A detailed inventory and description of all the roads within the town.
- ▶ A detailed surface condition survey of all the roads within the town.
- ▶ Definition of the town's goals and objectives with respect to their road maintenance and repair.
- ▶ Establishment of a long-term maintenance schedule which prioritizes road maintenance and repair needs based on condition evaluations.

The most vital element in a pavement management system is the process used to evaluate road conditions. A method of evaluating roadway conditions is the PASER (Pavement Surface Evaluation and Rating) system. PASER system manuals for both asphalt and gravel road surfaces can be obtained from:

Wisconsin Transportation Information Center UW-Madison
Room 741
432 North Lake Street
Madison, WI 53706
Phone: 800-442-4615

The town currently conducts an annual visual assessment of its roadways based on the judgment of the Board to set maintenance priorities. No type of formalized rating system is used. Implementation of the PASER system would allow the town to formalize roadway assessments to improve consistency and accuracy, therefore improving the credibility of recommended improvements and allowing for better planning and decision making.

Specifically, this type of system would allow the town to 1) select appropriate treatments for each road section, 2) evaluate road sections competing for immediate attention, 3) anticipate future deterioration and apply inexpensive maintenance options while they are still feasible, and 4) justify budgets for roadway improvements that are adequate to keep the roads in good condition so they will remain less expensive over the long term.

- ◆ The town should consider purchasing software to assist in estimating the costs of road construction/maintenance. A program called "PASERWARE" is available through the Wisconsin Department of Transportation, which allows for the easy determination of estimated road construction/maintenance costs. The program works in conjunction with a completed PASER evaluation to calculate costs. For further information regarding this program, contact the Wisconsin Department of Transportation.
- ◆ The town should consider incorporating pedestrian signage into its pedestrian trail system.

- ◆ The town should limit the number of driveway access points on local streets to improve traffic flow and maintain safety. When constructed, driveways should be adequately spaced to minimize vehicle conflict.
- ◆ The town should require traffic impact studies for large-scale developments which have the potential to create on-site and off-site traffic problems.
- ◆ The town should consider developing an official map to govern the locations of future streets within the town.
- ◆ The Town of Washington should ask to be placed on the public notification list of the District 7 Wisconsin Department of Transportation to have a more active role in long-range transportation planning and development in the area.
- ◆ The town should consider planning and developing multi-purpose trail systems that would provide increased safety for bicycles, pedestrians and snowmobiles along the roadway system.