CHAPTER 5: FACILITY INVENTORY AND CONDITIONS

This section provides a detailed inventory of the County's transportation system within the urbanized areas and a summary of its existing condition. The County's Rural TSP covers the areas outside of the urban growth boundaries (UGBs) of incorporated cities. The Urban Strategy covers the area within the urban growth boundaries of the 20 cities within Marion County and one city in Linn County. All urban County-maintained facilities have been inventoried for both physical and operational features. In addition, other forms of transportation, including transit, rail service, water service, and pipelines are included in this plan, as appropriate. In some cases, particularly with pipelines and other utilities, specific information is not included for security reasons. Information that is included in the individual city's TSP and the Marion County Rural TSP will not generally be duplicated here.

5.1 ROADWAY INVENTORY

There are approximately 140 miles of County maintained roadways within various UGBs. The County works with each city independently in deciding the criteria for which the roadway system will be designed, installed, and maintained. **Table 5-1** summarizes the County roadway mileage within each respective UGB and city limits. In addition, Marion County also has approximately 10.5 miles of local access roads in urban areas. Local access roads are public roadways, but under Oregon Revised Statutes 368.031, are not maintained by the County. In general, maintenance of these roads is the responsibility of adjacent property owners. The roadway inventory can vary from year to year, in large part due to annexations, growth and new development. The Cordon Road right-of-way is outside the Salem UGB, and is therefore not included in the urban mileage. However, since it is an important road and fulfills both an urban and rural role, it is included in the discussion and analyses of both the Urban Strategy and Rural TSP.

Table 5-1
Road Mileage within Urban Areas under County Jurisdiction

City	Miles within City Limits	Miles within UGB	Total Miles	Local Access Roads
Aumsville	2.98	1.16	4.14	0.00
Aurora	0.74	0.13	0.87	0.16
Detroit	0.00	0.00	0.00	0.00
Donald	1.42	0.00	1.42	0.00
Gates	1.69	0.00	1.69	0.00
Gervais	1.64	0.10	1.74	0.00
Hubbard	0.44	1.20	1.64	0.03
Idanha	0.00	0.00	0.00	0.00
Jefferson	1.56	1.01	2.57	0.00
Keizer	0.16	0.32	0.48	0.00
Lyons	0.00	0.62	0.62	0.51
Mill City	1.23	0.00	1.23	0.00
Mt. Angel	1.75	0.98	2.73	0.00
Salem	0.64	86.42	87.06	7.28
Scotts Mills	1.38	0.32	1.70	0.00
Silverton	7.68	2.93	10.61	1.57
Stayton	5.48	4.00	9.48	0.36
St. Paul	1.09	0.00	1.09	0.04
Sublimity	3.26	0.00	3.26	0.00
Turner	2.92	0.08	3.00	0.00
Woodburn	0.15	4.34	4.49	0.29
Total	**36.21**	**103.61**	**139.82**	**10.24**

5.1.1 Functional Classification

Roadways are grouped into categories, called **functional classifications.** These classifications are based on the character of service that the roadway provides as part of the overall transportation system. The categories used by Marion County are based on the definitions found in the U.S. Department of Transportation document titled *Highway Functional Classification: Concepts, Criteria and Procedures*, *March 1989*. There is considerable variability in the classification system used by each city. Each planning staff and council may tailor this classification system to meet local needs. The County coordinates with each city in the development of their TSP to resolve any concerns or inconsistencies between their functional classification and how we would define the County-maintained roads. In order to maintain consistency on the entire network, the city's classification must match, or be within, designated levels of the County designation. We then recognize their functional classification when we develop projects on the County-maintained road within the urban area.

The importance of the functional class of a road is it assists the jurisdiction in determining how it will be managed, such as the level of maintenance or improvements, how traffic is controlled at its intersections, standards that will be used when the road is reconstructed or improved, the level of access and development activity that is allowed along its length, and the priority of funding improvements among many other competing projects.

The functional classification for each city is shown on the maps in **Figures 5-1**. If a city expands its UGB, the formerly rural roadways in that boundary expansion would then be reclassified by the appropriate city to reflect their planned urban usage. This may mean that current rural local roads in these expansion areas may become urban Collectors or Arterials in the future. Both the city and County must adopt any UGB amendments, therefore the County is included in the roadway classification process, and may require the city to take over jurisdiction of specific roads upon annexation if it is appropriate to do so. The cities control annexation actions, and in many cases it is subject to a vote of the citizens. Roads do not necessarily change jurisdiction upon annexation, however, within the cities of Salem, Keizer and Woodburn, annexations result in the city taking over jurisdiction and maintenance of the former County roadway(s).

The latest federal surface transportation act, known as Moving Ahead for Progress in the 21st Century Act (MAP-21) included a new definition of the National Highway System (NHS). As of October 1, 2012, all roads that had a federal functional classification of principal arterial (and connect to a previous NHS road) are now included on the NHS, and are shown on **Figure 5-1e**. This added the following Marion County roads to the NHS, totaling approximately 30 miles, with almost half located in (or adjacent to) urban areas:

- McKay Road/Yergen Road/Ehlen Road from SR 219 to I-5
- Silverton Road/McClaine Street/C Street from Salem to Silverton
- Kuebler Boulevard/Cordon Road/Hazelgreen Road from I-5 to I-5
- Cascade Highway/1st Street in Stayton from Ida St to OR 22
- Center Street in Salem UGB
- State Street in Salem UGB
- Lancaster Drive in Salem UGB

The implications of being part of the NHS are not completely clear at this time. Marion County is part of a multi-disciplinary working group formed to work through the issues surrounding

expansion of the NHS to include all principal arterials. This process is expected to include a complete review of functional classification based on FHWA guidelines to be released in 2013 and will likely result in some facilities being downgraded and removed from the NHS.

5.1.2 Physical Characteristics

The complete inventory of County-maintained roads with urban areas is included in **Appendix B**. The inventory includes characteristics such as existing traffic volumes, surface type, pavement width, right-of-way width, pavement condition, and functional classification. This section provides a summary of the physical features that were evaluated for each roadway segment listed in the inventory.

Length of the segment and beginning and ending milepoints
Lengths were computed from the milepost system currently in place on the road network.

Number of travel lanes
This is the total number of through travel lanes on a segment regardless of the direction of travel flow.

Widths of the shoulders and travel surface
The total width of the actual travel surface was measured and the respective widths of the left and right shoulders were also recorded, including the existence of sidewalks.

Surface type of the travel surface and shoulders
The surface type (paved or gravel) was recorded.

Width of the right-of-way (ROW Width)
Right-of-way widths vary considerably along a roadway and from one road to another. Accurate information is difficult to find due to the age of documentation and the number of right-of-way dedications that occurred on individual parcels over the last several years. The width recorded in the inventory is the best average figure that could be obtained for each segment. This information is used for planning purposes only and should not be used where a high level of accuracy is required. Consult the Marion County Surveyor's Office for official information.

Pavement condition
Marion County has been using a pavement management program since the late 1980s and found it very successful in managing our paved roads. It uses a pavement condition rating system with five categories: very good, good, fair, poor, and very poor. These general ratings are based on a Pavement Condition Index (PCI) that reflects the type, severity, and amount of pavement distress (such as cracking, potholes, etc). The PCI is continually updated and provides us with a rating of a section of pavement as it changes over time. **Figure 5-2** shows the existing pavement condition for Marion County roadways inside urban areas. The breakdown of mileage in each of the classes of pavement condition is shown in **Table 5-2**. Also included in this table is the mileage of gravel-surfaced roads maintained by the County within the urban areas.

Table 5-2
Urban Road Surface Types and Conditions

SURFACE CONDITIONS	PAVEMENT CONDITION INDEX (PCI)	MILES	% OF TOTAL URBAN MILES
Paved Surfaces:			
Very Good	90 to 100	2	1.5%
Good	70 to 89	74	53%
Fair	50 to 69	38	27%
Poor	25 to 49	20	14%
Very Poor	1 to 24	2	1.5%
Gravel Surfaces:		4	3%
	TOTAL	140	100%

Note: Pavement condition survey conducted in 2012.

5.1.3 Truck Routes

There are currently only two truck routes posted in rural Marion County. The first is on the north side of Silverton and includes Monitor Road, Hobart Road, and Mt. Angel Highway. The second connects with a route in Stayton and includes Golf Club Road, Wilco Road, and Shaff Road. Portions of both of these truck routes are inside the urban growth boundaries of these cities. Many cities have designated truck routes within their city. In addition to these posted routes, there are several unofficial routes that are used by truck traffic on a regular basis.

There are also urban locations where "No Through Trucks" prohibitions have been posted to address specific truck-related problems. These include:

- The Silverton area (Quall Road, Forest Ridge Road, Madrona Heights Drive, Evans Valley Road, and Valley View Road);
- The northern part of the county in a small residential community (Cessna Street, Piper Street, and Mooney Avenue) between Boones Ferry Road and Wilsonville-Hubbard Hwy;
- Monroe Ave NE and 36th Ave NE between Lancaster Dr and Center St in the Salem area.

5.1.4 Bridges

There are 144 bridges maintained by Marion County. Of these, 16 are in urban areas and the remaining 128 are in rural areas. All bridges are thoroughly inspected every two years by the Oregon Department of Transportation utilizing their PONTIS reporting system, and given a sufficiency rating. The sufficiency rating is a number on a scale from zero to 100 that represents the overall condition of the structure. Essentially, the higher the rating, the better the condition of the bridge. The bridges in urban areas of Marion County span ratings from a low of 12.5 to a high of 97.5. These ratings for those bridges located in the urban areas are listed in **Table 5-3.** Bridges with **s**ufficiency ratings below 50 are eligible for replacement. Bridges with sufficiency ratings between 50 and 80 are candidates for rehabilitation. Those with sufficiency ratings greater than 80 are considered in excellent condition.

Table 5-3
County Bridges in Urban Areas

CITY	BRIDGE NUMBER	FACILITY	FEATURE CROSSED	SUFFICIENCY RATING	FUNCTIONAL CLASS
Aumsville	4714	West Stayton Rd SE	Mill Creek	49.00	Major Collector
Aumsville	4727	Aumsville Hwy	Beaver Creek	95.70	Major Collector
Aumsville	6008	Mill Creek Rd SE	Mill Creek	69.00	Major Collector
Aurora	17480	Ehlen Rd NE	Mill Creek	93.20	County Arterial
Gates	2523	Sorbin Ave SE	North Santiam	97.30	Urban Local
Turner	4715	* Wipper Rd SE	Mill Creek Overflow	12.50	Collector
Turner	4785	** 55th Ave SE	Ditch	52.20	Local
Turner	5533	3rd St SE	Mill Creek	76.30	Urban Arterial
Turner	20620	Mill Creek Rd SE	Mill Creek	95.20	County Arterial
Scotts Mills	6207	3rd St NE	Butte Creek	37.60	Collector
Silverton	9765	C St	Silver Creek	97.50	Urban Arterial
Stayton	4725	Golf Club Rd SE	Mill Creek	71.80	Urban Arterial
Stayton	4726	Shaff Rd SE	Salem Ditch	77.50	Minor Collector
Stayton	4795	Wilco Rd SE	Salem Ditch	80.80	Urban Arterial
Stayton	5351	S 1st Ave	Mill Race	47.80	Urban Arterial
Stayton	47208	Cascade Hwy SE	Mill Creek	81.00	Urban Arterial

* Scheduled for replacement 2013-2014
** Not part of the National Bridge Inventory (NBI) system

Bridges are also assigned an operating rating. This rating is used to determine whether overweight trucks can receive a permit to cross the bridge and if any requirements will be placed on their use of the bridge. A complete inventory of County bridges in urban areas is shown in **Appendix C**.

5.2 BICYCLE AND PEDESTRIAN FACILITIES

Bicycle and pedestrian facilities are typically expected in urban areas and are more appropriate than in rural areas, due primarily to the higher demand and shorter trip length. Many streets in urban areas have sidewalks, especially in newer developments. Bicycle lanes are often located just on collectors and arterials. **Figure 5-3** indicates where sidewalks and bicycle lanes are present on County roads within urban areas. Individual City TSPs typically have information on City facilities, as well.

The County does not maintain sidewalks in urban areas, and generally will only maintain the surface of bike lanes.

5.3 TRAFFIC OPERATIONS

A description of traffic operations in the County consists of an inventory of traffic control devices and lane channelization, a survey of traffic volumes and levels-of-service, and a survey of crash locations.

5.3.1 Intersection Traffic Control and Lane Channelization

Intersection traffic control in urban Marion County includes traffic signals, overhead flashers, multi-way stops, two-way stops, and some uncontrolled intersections. **Figure 5-4** shows the location of these traffic control devices in the urban areas.

5.3.1a School Related Traffic Control Devices

Traffic conditions near schools can directly affect the safety of school children walking, biking, and to some degree, being driven to school. School signing, including School Speed 20 reduced speed zones where appropriate, are signed in accordance with the federal Manual of Uniform Traffic Control Devices. By state statute, reduced speed school zones must be signed one of three ways, depending upon location and usage. These laws require that drivers read each sign legend and react accordingly. On rural, high speed roadways, driver compliance in general is very low with School Speed 20 zones. Except when activity occurs very near the roadway, drivers do not see the need to slow to 20 mph. It is also very difficult to get drivers to slow from 55 mph to 20 mph for short distances. To improve compliance at these zones, the County has installed school flashing beacons at a number of school speed zone locations. These beacons have two primary benefits. They are much more obvious to the typical motorist thereby increasing awareness of the posted zones, and they reduce the number of hours of the day that drivers need to reduce their speed when adjacent to school grounds. Both these benefits improve compliance and school area safety to some degree.

Marion County has installed flashing yellow beacons at twelve schools on County Roads, the most recent of which have come on line in September 2012. Of those twelve locations, ten are in the urbanized areas. The ten locations are listed below in **Table 5-4**.

Table 5-4
Marion County School Flashing Beacon Locations

ROAD NAME	TYPE	SCHOOL USED BY	CITY
Shaff Road SE	School frontage	Stayton Middle School	Stayton
Westfield Street NE	School frontage	Robert Frost Elementary School	Silverton
Pine Street	School frontage	Silverton High School	Silverton
Brown Road NE	Crosswalk	Scott Elementary School	Salem
Center Street NE	Crosswalk	Auburn Elementary	Salem
State Street	Crosswalk	Houck Middle School	Salem
Pennsylvania Avenue SE/Macleay Road SE	Crosswalk	Houck Middle School	Salem
MacLeay Road SE	Crosswalk	Mary Eyre Elementary School	Salem
Elma Avenue SE	School frontage	Four Corners Elementary School	Salem
MacLeay Road SE	Crosswalk	Four Corners Elementary	Salem

5.3.2 Daily Traffic Volumes

Traffic volume data has been collected on Marion County roadways for several years. As a result, actual counts or estimates are available for all roads in the system. The data is typically collected via road tube, on weekdays, from May to October. The urban areas are counted on a four-year cycle. In addition, vehicle classification counts are taken on most arterials and major collectors in the County and provide valuable data on road usage by different classes of vehicles from motorcycles to multi-axle truck configurations. The Oregon Department of Transportation also conducts regular traffic counts on State Highways. **Figure 5-5** illustrates the range of weekday daily traffic found on County Roads and State Highways within urban areas.

In order to gain an understanding of traffic volume trends as they relate to the functional classification of roadways, the use of vehicle miles traveled (VMT) along County roadways is helpful. In Marion County's roadway inventory, all County roads are divided into segments that are short enough to have consistent traffic flow throughout the segment. In order to calculate the VMT, one multiplies the length of the segment by the number of vehicles traveling on it daily. In order to find the total VMT on a roadway network, one adds together all the vehicle miles traveled on each road segment in that network.

As stated previously, Marion County maintains approximately 140 miles of roads within the UGBs and City limits, generating roughly about 359,000 daily vehicle miles traveled (based on 2011 data). This is approximately 6% less than the VMT calculated in the 2005 TSP Update. This can be attributed to factors such as a general overall downturn in the economy and a nearly doubling in the cost of a gallon of fuel since 2005. It also may be a result of increased awareness of various Transportation Demand Management (TDM) strategies – alternate modes of transportation, ride-share, etc.

5.3.3 Peak Hour Traffic Volumes

Several major County intersections within urban areas were analyzed in conjunction with preparation of the 2012 Rural Transportation System Plan (RTSP) using afternoon peak hour turning movement counts collected in 2012. The large volume of data precludes including the turning movement count data in this document. However, it is available through the Public Works Department. This count information, along with traffic control and lane configuration detail, was used to evaluate how well those intersections are operating at present.

5.3.4 Capacity: Level-of-Service (LOS) and Volume to Capacity (V/C) Ratios

Capacity describes the ability of a transportation facility to carry a certain number of vehicles or people. It is an important tool that allows engineers and planners to determine what potential improvements are likely to become necessary. These improvements will vary, but include such things as adding travel or turning lanes, installing traffic signals, and planning new roadways to accommodate growth in traffic. The capacity of a roadway or intersection is specific to that location and traffic characteristics. It is also important to know the capacity of both a segment of roadway (i.e., between intersections) as well as its intersections, to fully assess the needs of the transportation system.

Level-Of-Service (LOS) is a concept that is used to measure the quality of flow on or through a facility. It attempts to grade the amount of delay that a motorist must experience while traveling through an intersection or the level of congestion on a segment of roadway. This delay includes such elements as travel time, number of stops, total amount of stopped delay, amount of time spent following slower vehicles, and impediments caused by other vehicles. The level of service (LOS) is designated by a letter grade from A to F where LOS A represents free-flowing traffic with little or no delay, and LOS F represents severe congestion. The actual process to determine LOS is quite detailed, and will be applied to road sections as capacity issues become significant. The Levels of Service calculated here are approximate planning-level calculations.

Volume-to-Capacity ratio (V/C) is the ratio of the demand flow to the capacity of a given facility. Essentially, the V/C ratio represents the percentage of the available capacity of the facility that is being used by the traffic. A V/C ratio less than 0.85 generally indicates that adequate capacity is available and vehicles are not expected to experience significant queues and delays. As the V/C ratio approaches 1.0, traffic flow may become unstable, and delay and queuing conditions may occur. Once the demand exceeds the capacity (a V/C ratio greater than 1.0), traffic flow is unstable and excessive delay and queuing is expected. Under these conditions, vehicles may require more than one signal cycle to pass through the intersection (known as a cycle failure).

Control Delay describes the delay a motorist experiences that is attributable to the presence of a traffic signal and conflicting traffic. This includes time accelerating, decelerating, in queue, and decelerating.

Cycle Length refers to the time required for one complete sequence of signal intervals.

LOS, Control Delay, and V/C are used to measure how well components of the transportation system are functioning. **Table 5-5** lists the range of delay/volume-to-capacity ratios used to estimate the LOS (for signalized intersections) and provides operational characteristics for each of the six levels-of-service. A thorough description of Level of Service concepts can be found in the Transportation Research Board's *Highway Capacity Manual, 2010* (or subsequent editions).

For the urban road segments throughout Marion County, LOS and V/C were calculated. These results have been included in the roadway inventory (see **Appendix B**). For analysis purposes, the County considers LOS D or better to be acceptable for arterial and collector roadway segments in urban areas, and LOS C or better for local or residential roadways. Note, too, that each respective City may choose to have alternate methods to calculate what is acceptable within their jurisdiction. **Table 5-6** includes those road segments that operate at a LOS D or worse.

Table 5-5
Signalized Intersection Level-of-Service Characteristics

LOS	Control Delay (seconds)	*V/C	OPERATIONAL CHARACTERISTICS (FOR SIGNALIZED INTERSECTIONS)
LOS A	<10	≤1.0	Describes operations with a control delay of 10 seconds or less and a V/C no greater than 1.0. This level is typically assigned when progression is exceptionally favorable or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.
LOS B	>10-20	≤1.0	Describes operations with a control delay between 10 and 20 seconds and a V/C no greater than 1.0. Similar to LOS A, this level is typically assigned when there is favorable progression or the cycle length is short but differs in that more vehicles will stop than a LOS A.
LOS C	>20-35	≤1.0	Describes operations with a control delay between 20 and 35 seconds and a V/C no greater than 1.0. This level is typically assigned when progression is favorable or the cycle length is moderate. Individual cycle failures (one or more vehicles are not able to proceed through the intersection) may begin to appear at this level. The number of vehicles stopping at the intersection is significant, although many vehicles still pass through the intersection without stopping.
LOS D	>35-55	≤1.0	Describes operations with a control delay between 35 and 55 seconds and a V/C no greater than 1.0. This level is typically assigned when the V/C is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.
LOS E	>55-80	≤1.0	Describes operations with a control delay between 55 and 80 seconds and a V/C no greater than 1.0. This level is typically assigned when the V/C ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.
LOS F	>80	≤1.0	Describes operations with a control delay greater than 80 seconds or a V/C greater than 1.0. This level is typically assigned when V/C is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

Note: LOS characteristics taken from *Transportation Research Board, Highway Capacity Manual 2010* for signalized intersections, Chapter 18.
* An intersection operates at an LOS "F" if the volume-to-capacity ratio for an approach exceeds 1.0, regardless of its control delay (in seconds).

Table 5-6
Marion County Roadway Segments within UGB Functioning at Level-of-Service (LOS D) or Worse

LOS (D or worse)	SEGMENT	MILES
	Stayton	
1st Avenue (D)	Washington St to Shaff Rd	0.63
	Salem	
State St (D)	Lancaster Dr to Cougar St	0.87
Silverton Rd (D)	48th Avenue to Cordon Rd	0.33
Center St (D)	Lancaster Dr to Citation St	0.31
Center St (D)	Shores St to Mitchell St	0.16
Lancaster Dr (D)	Ward Dr to Portland Rd (99E)	0.78
Ward Dr (D)	Portland Rd (99E) to Lancaster Dr	0.58
Silverton Rd (E)	Lancaster Dr to 48th Ave	0.92
Lancaster Dr (E)	Silverton Rd to Ward Dr	0.96
State St (E)	Lancaster Dr to 37th Ave	0.16
Silverton Rd (F)	Salem C/L to Lancaster Dr	0.22
Lancaster Dr (F)	Rickey St to State St	0.90
Lancaster Dr (F)	State St to Center St	0.81
Lancaster Dr (F)	Devonshire Ct to Silverton Rd	0.19
	TOTAL	**7.83**

Intersections, however, are the locations where capacity and levels-of-service are more quickly degraded. This is due to the negative influence that traffic control devices and conflicts in vehicular movements have on the ability to quickly move vehicles past a location.

LOS has also been calculated at many urban intersections throughout the various cities and their UGBs and the results are shown on **Figure 5-6** and summarized in **Table 5-7**. The intersections selected were analyzed in previous a previous TSP update or were added based on their importance to the County. The County considers LOS D or better to be acceptable for signalized and four-way stop intersections and LOS E or better for other unsignalized intersections. However, individual cities may have standards based on their specific circumstances. Note that 67 out of the 73 intersections analyzed (91%) operate at LOS D or better. Those 6 intersections that exhibit a LOS of E or worse are listed below in **Table 5-8** along with the City / UGB where they are located.

Table 5-7
Urban Intersection Level-of-Service (LOS)

LOS	A	B	C	D	E	F
Total Urban Intersections Analyzed = 73	12	28	17	10	5	1

Table 5-8
Urban Intersections Functioning at Level-of-Service (LOS) E or Worse

INTERSECTION	2012 LOS	EXISTING TRAFFIC CONTROL	City/UGB
Cordon Rd at Auburn Rd	F	Two-way stop	Salem
Cordon Rd at Swegle Rd	F	Two-way stop	Salem
Lancaster Dr at Monroe Ave	F	Two-way stop (off-set intersection)	Salem
Lancaster Dr at State St	E	Signalized	Salem
Lancaster Dr at Winema Place	F	One-way stop (tee-intersection)	Salem
1st Ave / Cascade Hwy at Shaff Rd / Fern Ridge Rd	E	Signalized	Stayton
Pacific Hwy (99E) at Carl Rd	E	Signalized	Woodburn

5.3.5 Crash Experience

In order to get an idea of potential safety projects, it is necessary to understand the locations on the transportation system that are susceptible to crashes. There are multiple sources one can obtain crash data to prepare a crash analysis. For this report, only the crash data submitted to the State was considered for a three year period from 2008-2010. That said, the total number of crashes reported during the three year analysis period throughout Marion County (city, county, and state facilities) has decreased approximately 12% as compared to the previous TSP analysis period (2001-2003). This downward trend mimics the statewide crash trends, which are down 14% over the same time frame. Fatalities have decreased by 20% throughout Marion County and also statewide. Historically speaking, crashes reported throughout Marion County have comprised roughly 8.5% of all statewide crashes. This percentage mirrors the state population trend, as Marion County comprises approximately 8.2% of the State of Oregon's population. This overall downward trend is due, in part, to safety improvements at several locations, reduced levels of travel due to a very slow economic growth period, strategic law enforcement efforts, increased public awareness, and ultimately, the unpredictable nature of crash activity over time due to the many variables involved in most crashes.

The frequency of crashes on urban County Roads (including at intersections with State Highways) was evaluated to help determine possible problem areas. The same analysis was prepared for the rural areas throughout Marion County and can be found in the 2012 Rural Transportation System Plan (RTSP). The number of crashes that occurred at specific locations on County roads within the various urban growth boundaries (UGB) were counted for the three-year period from January 1, 2008 through Dec 31, 2010. Crash severity did not receive special consideration in this part of the analysis, but is considered in more detail when potential improvement projects are identified and evaluated. **Table 5-9** provides a summary of the number of locations on County roadways within various UGBs with three or more total crashes over the three-year period. **Figure 5-7** shows the locations where three or more crashes were recorded. It is important to note, too, that

many crashes may not be represented in this report due to the fact only State data was used and many crashes go unreported. Nearly a dozen cities have their own police departments and many others utilize the Marion County Sheriff's Office (MCSO) for their incident response.

Total crash numbers, by themselves, only tell us the amount of activity at a given location. A busier roadway would be expected to have more crashes because of the larger number of vehicles and potential conflicts. A better way of evaluating whether the number of crashes has exceeded an expected or typical level is to look at the crash rate. Crash rates depict the number of crashes per entering vehicles, and are displayed as crashes per million entering vehicles (MEV). This number can then be compared to average rates for a given type of facility to see which locations are experiencing a higher or lower rate of collisions than a typical road in that category. The statewide crash rate in Oregon for urban, non-freeway roadways in 2010 was 1.30 crashes per MEV. **Table 5-10** provides a summary of the number of locations on County roadways with three or more crashes and a crash rate greater than 1.30 crashes per MEV.

Although not all of these locations can be improved by a safety project, this map provides a useful tool in identifying locations that should, at least, be evaluated for possible safety, or other, improvements.

Generally speaking, many of the locations that have historically exhibited higher crash numbers are once again showing up in the crash analysis, a majority of which are within the City of Salem UGB. However, the number of locations that are experiencing crash rates of 1.30 MEV or greater have been reduced substantially over previous analysis periods.

Table 5-9

Urban County Roads – Locations with three or more crashes

COUNTY ROADS IN UGBs - NO. OF CRASHES (JAN 2008 - DEC 2010)	NO. OF LOCATIONS
3 to 5	6
6 to 9	2
10 or more	12
Locations with 10 or more crashes	
Lancaster Dr at Silverton Rd (Salem)	71
Lancaster Dr at Auburn Rd (Salem)	54
Lancaster Dr at State St (Salem)	49
Lancaster Dr at Hayesville Rd (Salem)	23
Lancaster Dr at Ward Dr (Salem)	22
Lancaster Dr at Durbin Rd (Salem)	21
Lancaster Dr at Durbin Rd (Salem)	21
Lancaster Dr at Rich Dr (Salem)	19
Lancaster Dr at Monroe Ave (Salem)	16
Lancaster Dr at Center St (Salem)	13
Ward Dr at Fisher Dr (Salem)	13
45th Ave at Silverton Rd (Salem)	12
Lancaster Dr at Winema Pl (Salem)	11

Table 5-10
Urban County Roads – Locations with three or more crashes AND crash rate greater than 1.30 crashes per million entering vehicles (MEV)

COUNTY ROADS IN UGBs - NO. OF CRASHES (JAN 2008 - DEC 2010)	NO. OF LOCATIONS / RATE PER MEV
3 to 5	0
6 to 9	0
10 or more	2
Locations with 10 or more crashes + MEV Rate ≥ 1.30	Number of Crashes
Lancaster Dr at Silverton Rd (Salem)	71 / 1.41
Lancaster Dr at Auburn Rd (Salem)	54 / 1.37

5.4 PUBLIC TRANSPORTATION PROVIDERS

In 1996, the Mid-Willamette Valley Council of Governments performed a study for Marion County with the purpose of making recommendations regarding a rural County public transportation system. Some updates have been made to that list to reflect changes that have occurred since then. **Table 5-11** lists transportation providers that have service within Marion County. **Figure 5-8** depicts transit routes throughout Marion County.

Table 5-11
Public Transportation Providers

INTER-CITY FIXED ROUTE SYSTEMS

- Chemeketa Area Regional Transportation System
- South Metro Area Rapid Transit
- Canby Area Transit

INTRA-CITY FIXED ROUTE SYSTEMS

- Salem Keizer Transit
- Woodburn Transit System (with paratransit dial-a-ride)

PARATRANSIT PROVIDERS

- Wheels - Oregon Housing & Associated Services
- Wheels of Joy (Dial-A-Ride in Sublimity/Stayton area)
- Catholic Community Services/Mt. Angel Developmental Programs
- Silverton Hospital CareVan (Dial-A-Ride for medical purposes only)
- Willamette Valley Medical Transport

OTHER PUBLIC TRANSPORTATION PROVIDERS

- Silver Trolley
- Mid-Columbia Bus Company
- HUT Airport Shuttle
- Valley Van Pool
- Valley Retriever
- Greyhound Bus Lines
- Amtrak Rail Service
- Amtrak Thruway Bus Service
- Taxi Service in Woodburn, Silverton, and Salem/Keizer

5.4.1 Salem-Keizer Transit

Transit in Salem-Keizer is provided by Salem-Keizer Transit (SKT), operating under the name "Cherriots" within the cities of Salem and Keizer, and under the name "Chemeketa Area Regional Transportation System" (CARTS) in greater Marion and Polk Counties. In addition to fixed routes, SKT provides other services including Cherriots Rideshare, CherryLift and CARTS Flex Routes.

5.4.1.1 Cherriots

Cherriots operates 22 bus routes in Salem and Keizer, one express bus route to Wilsonville, and one bus route to Grande Ronde. Ridership on Cherriots routes has decreased between 2008-2011, likely due to service changes implemented in 2009 that eliminated Saturday service, reduced service hours and redesigned the network of routes.

5.4.1.2 CARTS (Chemeketa Area Regional Transportation System)

The Chemeketa Area Transportation System (CARTS) was formed in 2001 to provide transit service to the nonurban areas of Marion and Polk Counties. It was originally operated under the authority of ORS 190, which authorizes local governments to form intergovernmental entities. Polk, Marion and Yamhill Counties, along with Salem-Keizer Transit were the members in the agreement. In 2006 governance changed and Polk and Marion County signed an intergovernmental agreement directly with Salem-Keizer Transit for the operations of CARTS.

CARTS Service is provided Monday through Friday in Marion County through three deviated-fixed routes, one flex route and one general public dial-a-ride. The deviated fixed routes operate on a fixed schedule with regular stops, but are able to deviate up to ¾ of a mile to pick up passengers when requested. All buses are lift equipped and have bicycle racks.

- Route 10 travels between Woodburn and Salem with stops in Gervais and Brooks. There are four round trips per day. The bus stops at both Chemeketa Community College and the Transit Mall in Salem. Ridership for 2011-2012 was 14,666.

- Route 20 goes between Silverton and Salem with stops in Mt. Angel twice a day. There are four round trips per day. The bus stops at both Chemeketa Community College and the Transit Mall in Salem. Ridership for 2011-2012 was 13,652.

- Route 30 runs from Gates to Salem and back and with stops in Mill City, Lyons, Mehama, Stayton, Sublimity, Aumsville and Turner. There are three round trips per day. The bus stops at the Transit Mall in Salem. Ridership for 2011-2012 was 17,126.

- The CARTS flex-route is a curb-to-curb service that picks up passengers who have made a reservation at least 24 hours in advance and takes them to any destination in Mt. Angel, Woodburn and Silverton. The bus is scheduled to spend a set amount of time in each city, picking up and dropping off passengers, before traveling on to the next city. This route stays in the north Marion County region and does not come into Salem. Ridership for 2011-2012 was 2,025.

- The South Marion County region has a dial-a-ride that travels between Turner, Aumsville, Sublimity and Stayton. The dial-a-ride is similar to the flex route but there are no set times for the bus to be in each city. The route depends are where riders have scheduled trips. Ridership for 2011-2012 was 2,091.

Funding comes from sources listed in **Table 5-12**. All figures are for the fiscal year 2012:

Table 5-12
2012 CARTS Funding

Federal 5310	For transportation services to seniors & people with disabilities	$577,695
Federal 5311	For general rural transportation	$238,067
State STF	For transportation services to seniors & people with disabilities	$229,489
Fares	Full fare: $2.00, Reduced fare (youth, seniors, disabled): $1.25	$107,435

5.4.1.3 Public Rideshare Programs – Cherriots Rideshare

The Regional Rideshare Program originated in 1975 and continues to serve commuters, students and residents that live or work in Polk, Marion and Yamhill Counties. Cherriots Rideshare, managed by Salem-Keizer Transit provides ride matching for Carpools and Vanpools, provides guidance on transit options in the region and supports safe bicycling and walking. They also assist with creating and promoting employer commute trip reduction programs. Cherriots Rideshare promotes using alternatives to the single-occupant vehicle, thereby reducing vehicle miles traveled, growth in parking demand, traffic congestion, energy consumption, and auto emissions in the Mid-Willamette Valley region. They also supplement regional transit service by providing viable options for commuters with origins or destinations in Marion, Polk and Yamhill Counties.

The Regional Park-and-Ride/Pool System is a collection of locations at which individuals can park their vehicles or be dropped off. From there, individuals can transfer to a transit system, carpool, or vanpool. In some instances, individuals can even bike or walk to their destination from a park-and-ride/pool location. These locations can be either designated with signs and various other amenities, or they may be very informal. Those located in, or close to, the Salem urban area may be served by transit whereas those in the rural areas tend to serve long distance commuters who participate in carpools or vanpools. These rural locations tend to be located near intersections with freeways or other major facilities that are easily accessed by commuting traffic. This option allows commuters and other people travelling into areas of dense employment (such as Portland, Eugene or Salem) to leave their vehicles parked during the day and transfer to a bus, carpool or vanpool.

In 1994, the Mid-Willamette Valley Council of Governments inventoried all the significant park-and-ride/pool facilities that serve the greater Salem area. Of the 16 sites inventoried, they found two rural designated sites and three rural informal sites in Marion County. The two designated sites are at Delaney Road at Interstate 5, and Cascade Highway at Oregon 22. The informal sites include Brooklake Road at Interstate 5, Silver Falls Highway at Oregon 22, and Joseph Street at Oregon 22. Since the inventory, the Joseph Street site was upgraded as part of a construction project on Oregon 22, and the park-and-ride location removed; a park-and-ride facility near Shaw Highway at Oregon 22 was designated, but never constructed; and an additional park-and-ride facility was designated and constructed on Mill Creek Road near the Golf Club Road/Oregon 22 interchange. A transit and park-and-ride facility is planned for the I-5/Oregon 214 (Woodburn) Interchange as part of the interchange reconstruction project. **Table 5-13** summarizes the park and ride location. The locations are included on **Figure 5-8**.

Table 5-13
Park and Ride Locations

PARK AND RIDE LOT NAME	LOCATION	CITY
North Salem Safeway Park & Ride	4990 River Road North	Keizer
Fred Meyer North Park & Ride	2855 Broadway St NE	Salem
Wal-Mart North Park & Ride	3025 Lancaster Drive Northeast	Salem
Market Street Park & Ride	1700 Hawthorne Ave	Salem
Grace Baptist Church Park & Ride	4197 State Street	Salem
Christ the Good Shepherd Lutheran Church Park & Ride	4440 State Street	Salem
Airport Road Park & Ride	1100 Airport Road SE	Salem
Fred Meyer South Park & Ride	3450 Commercial Street SE	Salem
Rite Aid Park & Ride	4500 Commercial Street SE	Salem
Wal-Mart South Park & Ride	5250 Commercial Street SE	Salem
Sunnyside/Turner Interchange Park & Ride	7800 Squirrel Hill Road	Salem
Hwy 22 and Golf Club Rd Park & Ride	11373 Mill Creek Rd, SE	Aumsville
Hwy 22 and Cascade Hwy Park & Ride	9500 Cascade Highway	Stayton

5.4.2 SMART (South Metro Area Rapid Transit)

Service to Wilsonville, in Clackamas County, is provided by SMART (South Metro Area Rapid Transit), which runs two buses southbound in the peak periods and three buses northbound in the morning and two in the evening. Service is between Wilsonville and the downtown Salem transit center. While this service is mainly targeted at the work commuter going between Wilsonville and Salem-Keizer, SMART does provide a link to the rest of the Portland Metropolitan Area with its service to the Barbur Transit Center in Portland, where it meets several Tri-Met bus routes. Salem-Keizer Transit is working with SMART and recently added four bus trips between Salem-Keizer and Wilsonville. The trips, which started in fiscal year 2002-3, target work trips in the opposite direction of the existing service. Programs also include Dial-a-Ride, Park-and-Ride, and Ride Share.

5.4.4 Canby Area Transit (CAT)

Canby Area Transit (CAT) provides commuter bus services to Woodburn, Aurora, Hubbard, Wilsonville, and Oregon City; and a general public dial-a-ride program within the city limits of Canby. Starting October 2012, fares are $1 per ride. CAT riders can connect to CARTS at the Woodburn Transit Center.

5.4.5 Westside Express Service (WES) Commuter Rail

Westside Express Service (WES), Oregon's first commuter rail service, opened in February 2009. It connects Beaverton to Wilsonville and to the MAX Light Rail, which is operated by TriMet. It connects with other transit providers: CAT, SMART, and Cherriots (Salem-Keizer Transit).

5.5 RAIL SERVICE AND GRADE CROSSINGS

There are two major railroad mainlines and two short lines in Marion County. These lines and their ownership are depicted back on **Figure 5-4**. One of these mainlines is the primary north-south line along the West Coast, and is owned by Union Pacific Railroad (UPRR). This line runs south out of Portland along the east side of the Willamette River through Oregon City and Canby, has 45 miles in Marion County, passing through Aurora, Hubbard, Woodburn, Gervais, Salem, Turner, and Jefferson. It continues south through the Willamette Valley, crosses the Cascade Mountains, and continues south through California. It is very heavily used for freight shipments, with long freight trains running at frequent intervals. This line is primarily used for long-distance freight movement, as the high volume of rail traffic along this line severely reduces the feasibility of serving individual shippers along it. This rail line also carries three northbound and southbound Amtrak passenger trains daily. Amtrak also runs 'throughway' bus service along this corridor to supplement the frequency of service provided by the trains.

The second line has 42.4 miles in Marion County and is owned and operated by Portland & Western Railroad (which is owned by the Genessee & Wyoming Railroad). This line crosses the Willamette south of Wilsonville, enters Marion County near Butteville, then runs through Donald, west of Woodburn, through Keizer and Salem, then south along the Willamette River into Linn County. The line within Marion County is currently only used for freight movements, and this freight traffic is increasing. A spur line runs west from this line to the Morse Brothers gravel operation north of Keizer. It is pertinent to note that commuter rail service started in 2009 from Wilsonville (approx 3 miles north of Marion County) to Beaverton.

Willamette Valley Railway Company (WVR) leases two short lines from Union Pacific Railroad (UPRR). The first short line runs south from the UPRR mainline in Woodburn, running 30.8 miles through Mt. Angel, Silverton, and Aumsville to the Norpac food-packaging plant in Stayton. Other shippers include Wilco Farm Supply and Red Built Engineered Wood Products in Stayton, Pepsi Northwest in Mt. Angel and Bruce-Pac in Woodburn. The line south of State Street is temporarily closed due to storm damage. It is unknown if and when repairs will be made. The entire line currently operates in an 'excepted track' status, which minimizes maintenance costs, but means that passenger travel is not allowed on this line and freight movements must be made at very low speeds (maximum 10 mph). Freight activity on this line has been decreasing in recent years due to the downturn in the economy. Willamette Valley Railway is seeking to improve this line for faster track speeds, and is also considering the possibility of running excursion or passenger trains along this line.

The second short line is called the Geer Branch and runs 3.5 miles west off the first short line towards (but no longer into) the Salem urban area. A portion of this line inside the City of Salem has been abandoned and removed. This line is currently only used for rail car storage.

The 2001 Oregon Rail Plan has identified several funding needs on the Portland & Western and Willamette Valley Railways, to be met by the appropriate railroad, with possible assistance through grant funding. These needs include rail renewal, bridge repair, cross tie renewal, and turnout renewal on the Portland & Western line, and rail, cross tie, and turnout renewal on the Willamette Valley Railway.

Completion of a substantial amount of these improvements would allow faster train speeds along these tracks, and could allow for passenger travel.

The opportunity exists for multimodal shipping terminals that would better connect rail with other modes of transportation (such as trucking) by allowing goods to be transferred between trains and trucks, and thus improve the efficiency of the Marion County freight transportation network. ODOT is in the process of assessing the feasibility of improved high speed passenger rail service between Portland and Eugene as part of the Northwest Rail Corridor.

With almost 122 miles of track, there are nearly 200 public rail crossings and numerous other private crossings within the boundaries of Marion County. Well over half of these public crossings are within the various urban areas or on State highways. **Table 5-14** summarizes the crossings within urban areas on county roads and the type of traffic control that is present at each. Each crossing is also identified on **Figure 5-4**.

Table 5-14
Traffic Control at Urban Railroad Crossings

CITY	COUNTY ROAD LOCATION	TRAFFIC CONTROL	RAILROAD
Aumsville	N 1st St north of Cleveland St	Yield with crossbuck	WVRR
Aumsville	E Main St/Mill Creek Rd SE east of N 1st St	Signal	WVRR
Aurora	Ehlen Rd NE (1st St) west of Main St	Signal with gates	UPRR/SP
Donald	Main St @ Matthieu St	Signal with gates	P&WRR
Gervais	Ivy Av	Signal with gates	UPRR
Gervais	Douglas Av	Signal with gates	UPRR
Jefferson	Cemetery Hill Rd SE @ North Av	Signal with gates	UPRR
Silverton	Jefferson St NE west of SR 214	Stop sign	WVRR
Stayton	Wilco Rd SE near Locust St	Signal with gates	WVRR
Turner	Delaney Rd SE west of 3rd St SE	Signal with gates	UPRR

5.6 AIR SERVICE

Facilities in urbanized areas of Marion County that accommodate air travel include one public airport, one Army National Guard heliport, and four private heliports. **Table 5-15** contains a full listing of these facilities along with their location, runway dimensions, surface type, and public/private status.

Table 5-15
Airports and Heliports in Marion County

AIRPORT / HELIPORT	LOCATION	RUNWAY DIMENSIONS	RUNWAY SURFACE	PUBLIC / PRIVATE
Army National Guard Heliport	East Side of McNary Field	NA	Asphalt	Private
PGE Salem Heliport	N edge of Salem	48' x 48'	Asphalt	Private
Reforestation Services Heliport	S Edge of Salem	100' x 40'	Gravel	Private
Salem Municipal-McNary Field	SE Edge of Salem	5811' x 150	Asphalt	Public
Salem Hospital Heliport	1 MI NE of Salem	50' x 50'	Mats	Private
Santiam Memorial Hospital Heliport	1 MI NE of Stayton	75' x 75'	Asphalt	Private

5.7 WATER TRANSPORTATION

The rivers in Marion County have not been utilized as a mode of transportation, especially in the urban areas. The rivers will continue to be used for aesthetic and recreational values and protected as a source of drinking water. For a more complete discussion of water transportation, refer to the Rural TSP.

5.8 PIPELINE SERVICE

The primary pipeline facilities in urban areas are associated with the City storm sewer, sanitary sewer, and water lines. The City of Salem transmits potable water from their supply facilities in Stayton (Geren Island) via two large transmission mains. For a more complete discussion of Pipeline services, refer to the Rural TSP.

5.9 UTILITY/COMMUNICATIONS SERVICE

There are eight companies that provide land line telephone service to various areas of Marion County and four companies that provide cable television service. Wireless phone service and internet providers are rapidly growing communication industries. Major providers include Cricket, Verizon Wireless, AT&T, T-Mobile, Cingular, Nextel, and Sprint. Refer to the Rural TSP **Appendix E** for maps showing the coverage areas of telephone, cable television, and electrical service providers in the County. In addition, several companies have fiberoptic communication lines running through County: MCI/Verizon Business, US West, Zayo Fiber Solutions, Level 3 Communications, and Light Speed Network. The locations of the primary fiberoptic lines are not shown for security reasons, as requested by the utility companies. The entire fiberoptic network is quite extensive and mapping all of the fiberoptic lines would be an extremely difficult task as many existing phone lines are in the process of being upgraded. As a result, the fiberoptic network is being expanded on a continuous basis.