CHAPTER 5: FACILITY INVENTORY AND CONDITIONS

This section provides a detailed inventory of the County's transportation system and a summary of its existing condition. The County's TSP covers the areas outside of the urban growth boundaries of incorporated cities. All rural 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. In some cases, particularly with pipelines and other utilities, specific information is not included for security reasons.

5.1 ROADWAY INVENTORY

There are thousands of miles of public roadway within the boundaries of Marion County. These roads are under the jurisdiction of many different agencies including the State, the County, each of the 20 incorporated cities, as well as the Forest Service, Bureau of Land Management, and the Oregon State Forestry Department. Of these roads, approximately 1125 miles are maintained by Marion County. Of this total mileage, approximately 140 miles lie within various urban growth boundaries, leaving 985 miles of rural County Roads. In addition, Marion County also has approximately 80 miles of local access roads that are public roadways, but under Oregon Revised Statutes, are not maintained by the County. A little over 10 miles of the local access roads are in urban areas and almost 70 miles are in the rural area. 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.

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.* A summary of these classes and a brief definition can be found in **Table 5-1**. These classifications are designed to be applied to all levels of roadways including interstate freeways, state highways, county roads, and city streets. With permission from the Oregon Department of Transportation, the County has uniformly applied these definitions to both state highways and County roads. With regard to incorporated cities and adjacent counties, Marion County cannot specify what classification system will be used in their planning efforts. However, when comparing the functional class designations used by each of the cities and adjacent counties, it is apparent that all transitions are appropriate based on the guidelines suggested in the USDOT description of the functional classification system.

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.

Table 5-1
Rural Road Functional Classification Characteristics

Principal Arterial
- Continuous segments with trip length and travel density indicative of statewide or interstate travel; and
- Serve all of the large urban areas and most of the moderate sized cities.

Arterial
- Link cities, larger towns, and other major traffic generators; and provide interstate and inter-county service: and
- Spaced such that all developed areas of the region are within reasonable distance of an arterial; and
- Serve a higher travel density, trip length, and overall travel speed than collector and local systems.

Major Collector
- Provide service to larger towns not directly served by higher classed roads and to other traffic generators of equivalent intra-county importance (including parks, tourist attractions, significant resource areas, etc.); and
- Link these places with nearby towns and cities, or routes of higher classification; and
- Serve the more important intra-county travel corridors.

Minor Collector
- Spaced at intervals to collect traffic from local roads and bring all developed areas within a reasonable distance of a collector road; and
- Provide service to any remaining smaller communities and traffic generators; and
- Link locally important traffic generators with their local constituents.

Local
- Primarily provide access to adjacent lands; and
- Provide relatively short travel distances compared to higher classed facilities.

The original (1998) RTSP included a list of roadways and their functional classification. Several changes were made in the 2005 Update. **Table 5-2** shows the changes since the 2005 update and those that are being made as part of this 2012 Update, which better reflect the current and future function of each roadway.

Table 5-2
2012 Revisions to Functional Classification System
(Note: Road segments are listed generally from north to south)

Road	From	To	Previous Class	New Class
Wipper Rd SE	Chicago St SE	Hennies Rd SE	Minor Collector	Major Collector

The updated functional classification is shown on the map in **Figure 5-1**. State Highways are included on the map at their estimated level of function. These functions are consistent with the State Highway classifications included in the 1999 Oregon Highway Plan and shown in **Figure 5-2**. The functional classifications of roads within the urban areas are not shown on the map. Refer to the Marion County Urban Strategy or the appropriate city's TSP for information on their assignment. If a city expands its Urban Growth Boundary, 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.

The Functional Classification for rural County Roads is adopted at the same time that the RTSP is adopted by the Board of Commissioners. **Table 5-3** provides a breakdown of the rural miles of County roadways by functional class, estimates for State Highways by Functional Class, and combined mileages and percentages.

Table 5-3
Rural Miles of Roads by Functional Class

CLASSIFICATION	COUNTY ROAD MILES	STATE HWY MILES	TOTAL MILES	% COUNTY ROAD MILES	% TOTAL MILES
Principal Arterial	16	81	97	1.6 %	8.5 %
Arterial	69	37	106	7.0 %	9.2 %
Major Collector	111	44	155	11.3 %	13.5%
Minor Collector	172	0	172	17.5 %	15.0 %
Local	617	0	617	62.6 %	53.8 %
TOTAL	985	162	1147	100 %	100 %

In addition, the Forest Service maintains its own classification of roads: primary routes, secondary routes, and low-standard roads. Primary routes function similarly to a collector, as they collect traffic from various recreation areas, campgrounds, and other sites as they progress toward the statewide highway system. Primary routes are sometimes used for longer trips, particularly of a tourist nature. Secondary routes and low-standard roads function as local roads, primarily providing access to local sites. There is one primary route in Marion County: Route 46 (also known as Breitenbush Road) runs to the northeast from Detroit, past many attractions in the Willamette and Mt. Hood National Forests, then north into Clackamas County after about 30 miles. It then runs generally to the northwest, eventually linking up with Oregon 224. There are hundreds of miles of Bureau of Land Management (BLM) and low-standard Forest Service roads,

which primarily provide access to local areas; almost all of these roads are unpaved and likely to remain that way.

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 5-3**. This added the following Marion County roads to the NHS, totaling approximately 30 miles, with more than half in (or adjacent to) the rural 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

This complete inventory of rural County-maintained roads and non-County maintained roads (Local Access Roads) 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.

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 5-4** shows the existing pavement condition for Marion County roadways outside of urban areas. The breakdown of mileage in each of the classes of pavement condition is shown in **Table 5-4**. Also included in this table is the mileage of gravel-surfaced roads maintained by the County.

Table 5-4
Rural Road Surface Types and Conditions

SURFACE CONDITIONS	PAVEMENT CONDITION INDEX (PCI)	MILES	% OF TOTAL RURAL MILES
Paved Surfaces:			
Very Good	90 to 100	26	2.5%
Good	70 to 89	472	48%
Fair	50 to 69	174	18.%
Poor	25 to 49	109	11%
Very Poor	1 to 24	11	1%
Gravel Surfaces:		193	19.5.%
TOTAL		**985**	**100%**

Note: Pavement condition survey conducted in 2012, including those pavement enhancement projects completed in 2012.

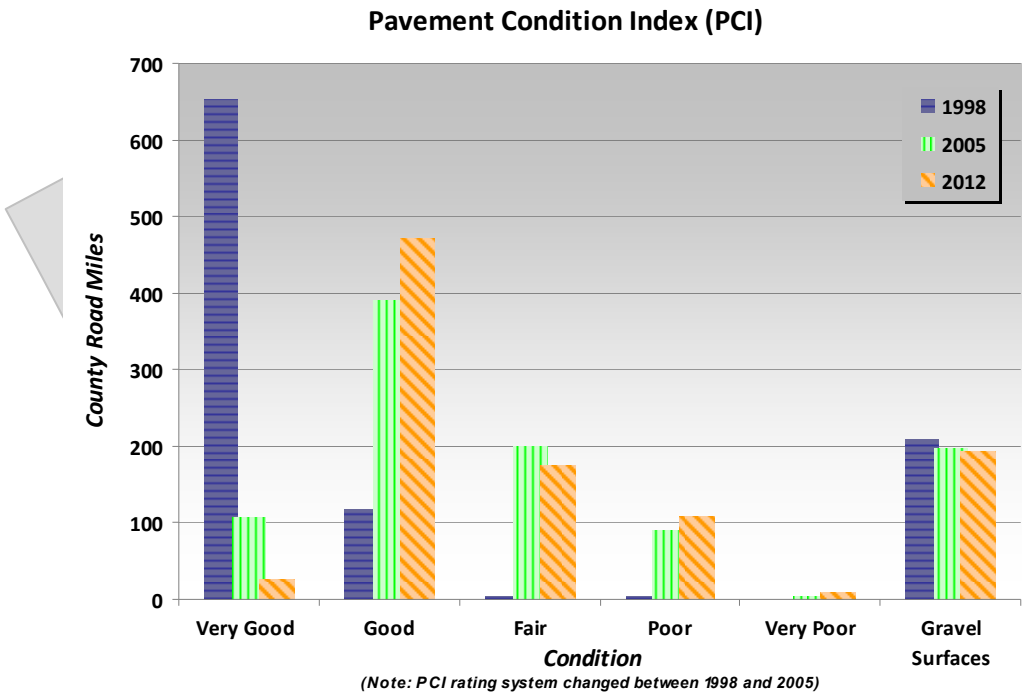
Recognizing that arterials and collectors receive more use than lower-class roadways, separate tables are maintained for these facilities; this data is shown in **Table 5-5**:

Table 5-5
Pavement Condition for Arterials and Collectors

PAVEMENT CONDITION (pci)	ARTERIAL MILEAGE	ARTERIAL PERCENTAGE	COLLECTOR MILEAGE	COLLECTOR PERCENTAGE
Very Good (90 to 100)	2	2%	18	6%
Good (70 to 89)	68	80%	174	61%
Fair (50 to 69)	13	14%	78	27%
Poor (25 to 49)	3	4%	5	5%
Very Poor (1 to 24)	0	0%	2	1%

Table 5-6 provides a graphical representation of the PCI comparison between the 2012 RTSP and the 1998 and 2005 TSP's. Note that the PCI rating system changed between 1998 and 2005, and has remained consistent since.

Table 5-6



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 rural 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;
- Butteville Road between Ehlen Road and Highway 219.

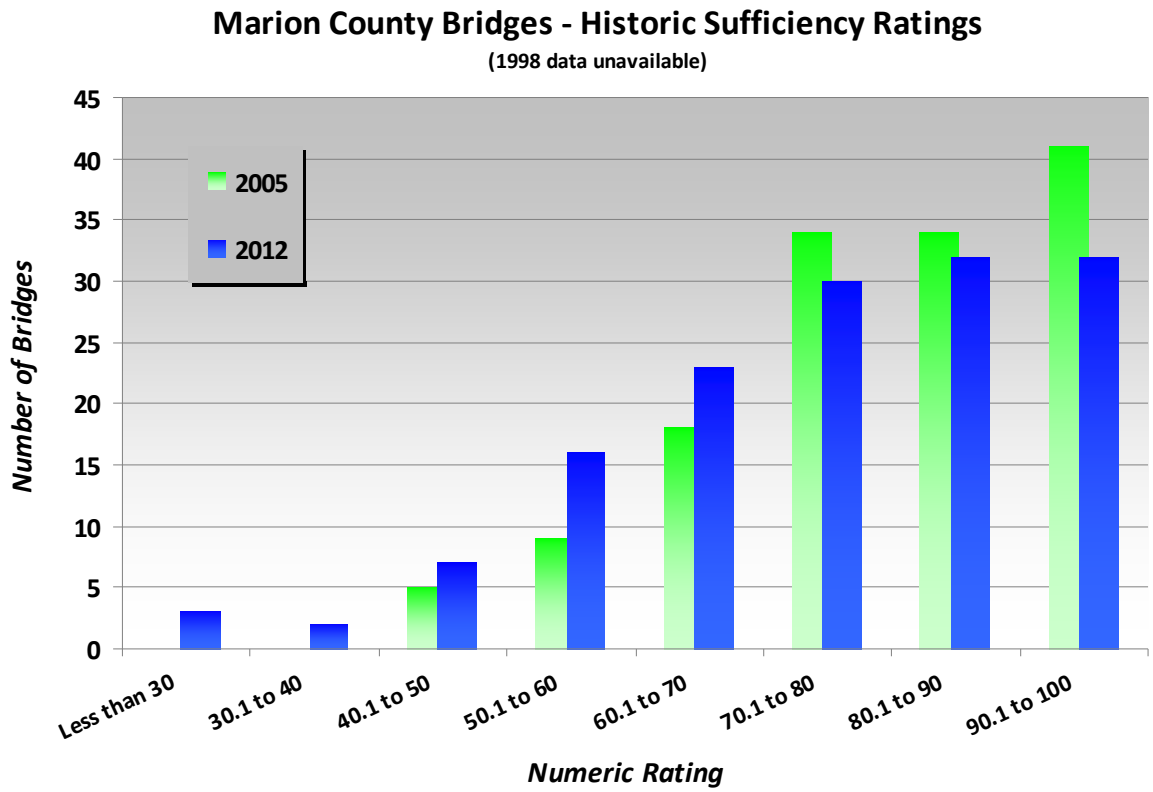
5.1.4 Bridges

There are 145 bridges maintained by Marion County. Of these, 16 are in urban areas and the remaining 129 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; the higher the rating, the better the condition of the bridge. The bridges in Marion County span ratings from a low of 12.5 to a high of 100. These ratings are summarized in **Table 5-7**. The bridge locations by bridge sufficiency range are shown on **Figure 5-5**. **Table 5-8** provides a graphical comparison of bridge conditions from 2005 to 2012.

Table 5-7
County Bridge Sufficiency Ratings

SUFFICIENCY RATING RANGE	NUMBER OF BRIDGES	PERCENTAGE
90.1 to 100	32	22%
80.1 to 90	32	22%
70.1 to 80	30	21%
60.1 to 70	23	16%
50.1 to 60	16	11%
40.1 to 50	7	5%
30.1 to 40	2	1%
Less than 30	3	2%

Table 5-8



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 is shown in **Appendix C**. Six bridges are presently restricted to certain maximum vehicle weights or dimensions. **Table 5-9** lists the weight and/or height restrictions of these bridges and shows the functional class of the roadway crossing that bridge.

Table 5-9
Restricted County Bridges

FACILITY	OVER	RESTRICTION	FUNCTIONAL CLASS
Gallon House Road (Covered Bridge)	Abiqua Creek	Weight 19 Ton Height 14' 2" One Lane Bridge	Local
Silverton Road	Little Pudding River	20 to 40 Ton (Depending on Configuration)	Principal Arterial, NHS
*Labish Center Road	Little Pudding River	Weight 40 Ton	Minor Collector
Rambler Drive	Little Pudding River	Weight 40 Ton	Local
River Road S	Willamette River	Weight 40 Ton	Arterial
**Wipper Road SE	Perrin Irrigation Canal	Weight 3 Ton	Major Collector

*No longer on ODOT bridge inspection report due to changes in reporting criteria – location is less than 20' span
**Scheduled replacement in 2013-14

5.1.5 Other Road Restrictions

There are four other structures that place restrictions on County roads. These are railroad bridges that create height restrictions of 9' 4", 11' 0", 12' 3", and 12' 9". These structures are on Riverdale Road, Riverside Road, River Road S, and River Road S, respectively. All four are on the mainline owned by Portland and Western Railroad. In addition to height restrictions, these bridges create very sharp curves and narrow roadways at their undercrossings.

Table 5-9a
Other Road Restrictions

FACILITY	RAILLINE	RESTRICTION	FUNCTIONAL CLASS
Riverdale Rd RR Bridge	Portland & Western	Height 9'4"	Local
Riverside Rd RR Bridge	Portland & Western	Height 11'0"	Minor Collector
River Rd S RR Bridge	Portland & Western	Height 12'3"	Arterial
River Rd S RR Bridge	Portland & Western	Height 12'9"	Arterial

Marion County has various roadways that are restricted to statutory lengths for vehicle combinations. They are referred to as 'red routes'. In addition, there are locations where weight is restricted as segments of roadway. These restrictions are shown on the map in **Figure 5-6**.

5.2 BICYCLE AND PEDESTRIAN FACILITIES

Due to the rural nature of most of the County, the majority of facilities outside the urban areas do not have bicycle and pedestrian facilities. Commuting along the rural County roadway system by bicycle is fairly rare due to large distances between population and employment centers.

However, Marion County has strived over a period of several years to add paved shoulders to many of the County arterials to fill a combined role of providing safety shoulders along with creating areas for bicycle and pedestrian use. In order to extend the number of roadway miles with paved shoulders, due to limited funds, the County sometimes constructed three- or four-foot paved shoulders rather than five-foot shoulders most desirable for bicyclists. This approach has been very popular with cyclists and motorists alike because it is a good compromise between design ideals and cost of construction that maximizes the usefulness of our rural roads. Often, a three-foot shoulder can be relatively easy to construct while construction of a five- or six-foot shoulder would require extensive construction work to move utilities and roadside ditches. The locations of paved shoulders on the rural system are shown on **Figure 5-7**. In addition, one location where a designated bike facility exists in the rural area is also included. This particular facility, on Grim Road, serves a high school, middle school and elementary school clustered on a half-mile segment of road. **Table 5-10** summarizes the number of miles of County rural roadway that have paved shoulders greater than 2.5 feet in width. That being said, roughly 4 percent of rural paved roads have shoulders four feet or wider, and almost 13 percent have shoulders 2.5 feet or wider. In recent years, limited resources have restricted the ability to add paved shoulders, and are likely to restrict the ability to add paved shoulders in the foreseeable future unless additional funding is located.

Table 5-10
Rural Paved Shoulder Mileage

FUNCTIONAL CLASSIFICATION	PAVED SHOULDERS 2.5 TO 4 FEET WIDE	PAVED SHOULDERS 4 FEET AND WIDER	TOTAL MILES PAVED SHOULDERS
Arterial	41.5 mi	32.0 mi	73.5 mi
Major Collector	31.6 mi	0.0 mi	31.6 mi
Minor Collector	3.9 mi	0.0 mi	3.9 mi
Local	2.4 mi	0.2 mi	2.6 mi
TOTAL	**79.4 mi**	**32.2 mi**	**111.6 mi**

Sidewalks are even more limited in the rural areas than paved shoulders. Most efforts to add sidewalks and walkways are concentrated in the urban areas. In rural areas, sidewalks appear primarily in a small number of rural residential developments, such as mobile home villages and subdivisions, and in unincorporated communities such as Brooks and Monitor. They generally have been placed by developers only on those roads within the development and typically do not connect with facilities on the higher classed road network. Several existing pieces of sidewalk are identified on **Figure 5-7** and a detailed inventory can be found in **Appendix D**.

One element of bicycle use that has increased in recent years is recreational cycling, including organized rides and road races. The varied terrain, rural beauty, relatively low traffic volume, and well-maintained roads make this area a top attraction for cycling groups from around the state to hold their annual events. These events attract several thousand cyclists to the County each year as well as thousands of spectators

and family members. Pedestrian activities tend to be more limited in scope, though recreational and fitness walks and runs are also very popular in the area.

The Oregon Parks and Recreation Department has designated the Willamette Valley Scenic Bikeway, a 130-mile route along existing roads from Champoeg State Park (in northern Marion County) to Eugene. From its starting point in Champoeg Park, the route follows Champoeg Road, Riverside Drive, Blanchet Road, River Road, Matheny Road, Wheatland Road, to Willamette Mission State Park, then crossing via the Wheatland Ferry into Yamhill County. An alternate route follows Wheatland Road and Ravena Drive to Windsor Island Road into Keizer and Salem, and River Road from Salem to the Independence Bridge over the Willamette River, and Riverside Road and Buena Vista Roads from the Independence Bridge to the Buena Vista Ferry crossing into Polk County. Marion County portions of the route are shown on **Figure 5-7**.

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 rural Marion County includes traffic signals (many at intersections with state highways), overhead flashers, multi-way stops, two-way stops, and some uncontrolled intersections. **Figure 5-8** shows the location of these traffic control devices in the rural County.

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. Flashing beacons are installed along school frontages and/or at crosswalk locations.

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. Funding only allows a few locations to be improved each year. Of the twelve locations, only two are in the rural County. Those are listed below in **Table 5-11**. The ten locations within the urban areas are listed in the Urban Strategy companion document of the 2012 Rural Transportation System Plan Update,

Table 5-11
Marion County School Flashing Beacon Locations

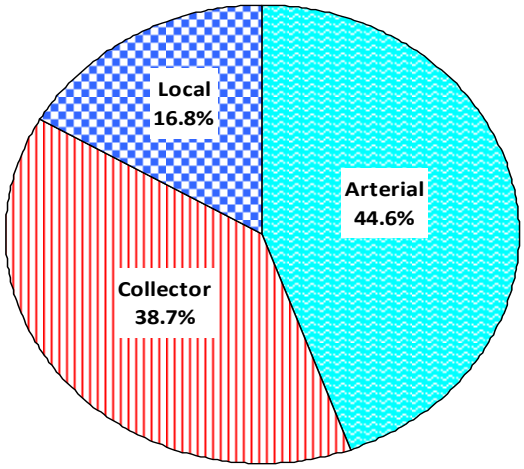
ROAD NAME	TYPE	SCHOOL USED BY
Cascade Highway NE	Along school frontage	Evergreen Elementary
Parrish Gap Road SE	Along school frontage	Cloverdale Elementary

5.3.2 Daily Traffic Volumes

Traffic volume data has been collected on Marion County roadways for many years. As a result, actual counts or estimates are available for all roads in the County system. The data is typically collected via road tube on weekdays from May to October. The County is 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 5-9** illustrates the range of weekday daily traffic found on County Roads and State Highways. 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. The pie chart below depicts the percent of VMT throughout rural Marion County based on functional classification.

As stated previously, Marion County has approximately 985 miles of rural County roads (outside UGBs), with a total of about 1,028,000 daily vehicle miles traveled (based on 2011 data). County maintained roads within the UGBs and City limits include approximately 140 miles, with a total of about 359,000 daily vehicle miles traveled (based on 2011 data). Therefore the total number of VMT on County roads is approximately 1,387,000 daily vehicle miles traveled, compared to 1,475,000 daily vehicle miles traveled as recorded in the 2005 TSP Update. This represents nearly a 6% decrease in VMT on County maintained roads. This can be attributed to factors such as a general overall downturn in the economy and very high fuel prices at times 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.

Chart of Vehicle Miles Traveled (VMT) Percent by Functional Classification



5.3.3 Peak Hour Traffic Volumes

Peak hour turning movement counts were obtained in 1994 for most major intersections in the County for the 2005 Rural Transportation System Plan (RTSP) Update. Several major County intersections were reanalyzed for the 2012 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.

The **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.

LOS and V/C are used to measure how well components of the transportation system are functioning. **Table 5-12** lists the range of volume-to-capacity ratios used to estimate the LOS (for two lane highway segments) 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).

Table 5-12
Road Segment Level-of-Service Characteristics

LOS	APPROX. V/C	OPERATIONAL CHARACTERISTICS (FOR TWO-LANE ROADWAY)
LOS A	0.00 - 0.12	Motorists are able to drive at their desired speed. Without strict speed limit enforcement, average speeds would approach or exceed 60 mph. Drivers have opportunities to pass other motorists almost on demand. Almost no platoons (groups) of three or more vehicles are observed. Drivers would spend no more than 30 percent of the time following slower vehicles.
LOS B	0.13 - 0.24	Speeds of 55 mph or slightly higher are expected on level terrain. Passing opportunities needed to maintain desired speeds are still available although not as often as LOS A. Some platoons of three or more are observed. Drivers spend up to 45 percent of the time following slower vehicles.
LOS C	0.25 - 0.40	Average speed still exceeds 52 mph on level terrain. Passing starts to become difficult. Platoons begin to get longer or start to link up with one another. While traffic flow is stable, it is becoming susceptible to congestion due to turning traffic and slow-moving vehicles. Drivers are following up to 60 percent of the time.
LOS D	0.41 - 0.60	Traffic flow begins to become unstable although speeds of 50 mph can still be maintained under ideal conditions. Passing becomes extremely difficult. Platoon sizes of 5 to 10 vehicles are common. Turning vehicles or roadside distractions cause major shockwaves in the traffic stream. Drivers are following up to 75 percent of the time.
LOS E	0.61 - 0.90	Speeds will drop below 50 mph, even under ideal conditions. On segments with less than ideal conditions, average travel speeds will be slower, as low as 25 mph on sustained upgrades. Passing is virtually impossible. Platooning becomes intense when slower vehicles or other interruptions are encountered. Drivers are following more than 75 percent of the time.
LOS F	0.91 and above	Represents heavy congestion or breakdowns in traffic flow. Traffic demand exceeds capacity, with traffic volumes lower than capacity and traffic speeds below capacity speed. Drivers are virtually always stuck behind slower vehicles.

Note: LOS characteristics taken from *Transportation Research Board, Highway Capacity Manual, Special Report 209, 1994* for two-lane highway sections.

For the rural road segments throughout Marion County, LOS and V/C were calculated using Average Daily Traffic (ADT). These results have been included in the roadway inventory in **Appendix B**. With few exceptions, most segments of rural County roadway operate at an

acceptable LOS B or better. The typical V/C ratios are well under 0.24, which indicates the facilities could easily carry more traffic between intersections. A total of 26.5 miles of road have LOS C and 4.9 miles have LOS D. No roadway segments have a level-of-service worse than LOS D, although some are close. In 2005, a total of 20.9 miles of road had LOS C and 4.6 miles had LOS D, indicating that the road segments are experiencing a small increase in congestion, but are still considered acceptable. **Table 5-13** includes those roads that have LOS D. The County considers LOS D or better to be acceptable for roadway segments in rural areas

Table 5-13
Marion County Roadway Segments with LOS D
(Rural)

LOS D	SEGMENT	MILES
Arndt Road	Wilsonville-Hubbard Hwy to Airport Road (Clackamas Co. Line)	0.3
Cordon Road	Near Caplinger Rd to Silverton Rd	3.7
Brooklake Road	SPRR Crossing to Hwy 99E	0.3
Brooklake Road	Huff Ave to West of I-5 interchange	0.2
Brooklake Road	Vicinity of I-5 interchange	0.3
Ehlen Road	Vicinity of I-5 Interchange	0.1
	TOTAL	**4.9**

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 has on the ability to quickly move vehicles past a location.

LOS has also been calculated at 158 rural intersections throughout the County and the results are shown on **Figure 5-10**. The LOS calculated for the 1998 and the 2005 RTSP's are reported here in many locations. However, updated calculations based on 2011-2012 data were completed for several selected intersections on rural county roads (particularly those intersections with higher traffic volumes). **Table 5-14** summarizes the results for the rural intersections and provides a comparison of LOS in 2005. In rural areas, 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.

Table 5-14
Rural Intersection Level-of-Service (LOS)

LOS	A	B	C	D	E	F
2005 Rural (%)	86 (62%)	31 (22%)	14 (10%)	4 (3%)	3 (2%)	1 (1%)
2012 Rural (%)	83 (53%)	35 (22%)	22 (14%)	11 (7%)	1 (1%)	6 (4%)

These numbers show that most major rural intersections perform very well with almost 75 percent of the locations analyzed operating at LOS A or B. Of the 40 rural locations that operate at LOS C or lower, 15 involve State Highways. For the 25 that are on the County system, 10 are immediately adjacent to the Salem urban area (i.e., on Cordon Road).

When comparing the LOS information from this 2012 update with the 2005 update, the traffic situation (as described by LOS) is getting worse, although at a slower rate than observed during the period between 1998 and 2005. Generally speaking, traffic volumes are increasing throughout rural Marion County. Some intersections are starting to exhibit capacity issues associated with these increasing traffic volumes. In the aftermath of the global financial crisis of 2007-2008 and a challenging economic climate, funding levels have not been sufficient to 'keep up' with these increasing capacity issues, and the County has had to prioritize improvements to use its limited resources on the most pressing needs. As current rates of traffic volume growth continue, we will see many more intersections with capacity issues. While intersections with LOS C or D are considered to meet standards, their performance is not as good the LOS A or B that residents and drivers have become accustomed to in many locations. Thus, if current traffic volume growth and transportation funding patterns continue, drivers can expect to encounter much more traffic and delay in their travels.

Table 5-15 shows eight rural intersections (non-State Highway) currently operating at LOS D or worse (similar to the 2005 update). Although a LOS D is considered to be an acceptable level-of-service, it is considered the point at which capacity-related issues begin to occur. It should be noted that most locations operating at LOS D or worse are part of ongoing analyses for potential traffic control changes in order to improve traffic operations or address safety issues.

Table 5-15
Intersections Operating at LOS D or worse

INTERSECTION	2012 LOS (2005 LOS)	EXISTING TRAFFIC CONTROL
Cordon Rd at Swegle Rd	F (F)	Two-way stop
Cordon Rd at Auburn Rd	F (E)	Two-way stop
Arndt Rd at Airport Rd	D (F)	Signalized
Cordon Rd at Pennsylvania Ave	D (D)	One-way stop (tee-intersection)
Brush Creek Rd at Silverton Rd	D (C)	Two-way stop
Boones Ferry Rd at Ehlen Rd	D (D)	Two-way stop
Bents Rd at Ehlen Rd	D (E)	One-way stop (tee-intersection)
Cordon Rd at Carolina Ave	D (D)	One-way stop (tee-intersection)

5.3.5 Crash Experience

In order to get an idea of potential safety projects, it is important 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 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 rural County Roads (including at intersections with State Highways) was evaluated to help determine possible problem areas. The number of crashes that occurred at specific locations on County roads 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 5-16** provides a summary of the number of locations on County roadways with three or more total crashes over the three-year period. **Figure 5-11** shows the locations where three or more crashes were recorded.

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 rural, non-freeway, roadways in 2010 was 0.77 crashes per MEV. **Table 5-17** provides a summary of the number of locations on County roadways with three or more crashes and a crash rate greater than 0.77 crashes per MEV. **Figure 5-12** shows the locations that met these criteria.

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. It should also be noted that improvements have already been made at some locations and that future crash data is necessary to evaluate the full benefits of these improvements.

Table 5-16
Rural County Roads – Locations with three or more crashes

COUNTY ROADS ONLY - NO. OF CRASHES (JAN 2008 - DEC 2010)	NO. OF LOCATIONS
3 to 5	26
6 to 9	9
10 or more	6
Locations with 10 or more crashes	Number of Crashes
Cordon Rd and State St	26
Cordon Rd and Sunnyview Rd	18
Cordon Rd and Silverton Rd	17
Cordon Rd and Center St	16
Cordon Rd and Swegle Rd	13
River Rd and Clearlake/Quinaby Rds	10
COUNTY ROADS INTERSECTING STATE HWYS - NO. OF CRASHES (JAN 2008 - DEC 2010)	**NO. OF LOCATIONS**
3 to 5	7
6 to 9	11
10 or more	7
Locations with 10 or more crashes	Number of Crashes
I-5 at Ehlen Rd Interchange	29
Wilsonville-Hubbard Hwy at Ehlen Rd & Boones Ferry Rd	17
*Oregon 99E at Belle Passi	15
I-5 at Delaney Rd	15
Oregon 214 and Hobart Rd	12
Oregon 99E and Brooklake Rd	11
I-5 at Brooklake Rd Interchange	11

* Safety improvements have been constructed during the analysis period; it is anticipated the number of crash incidences will be reduced in future analyses

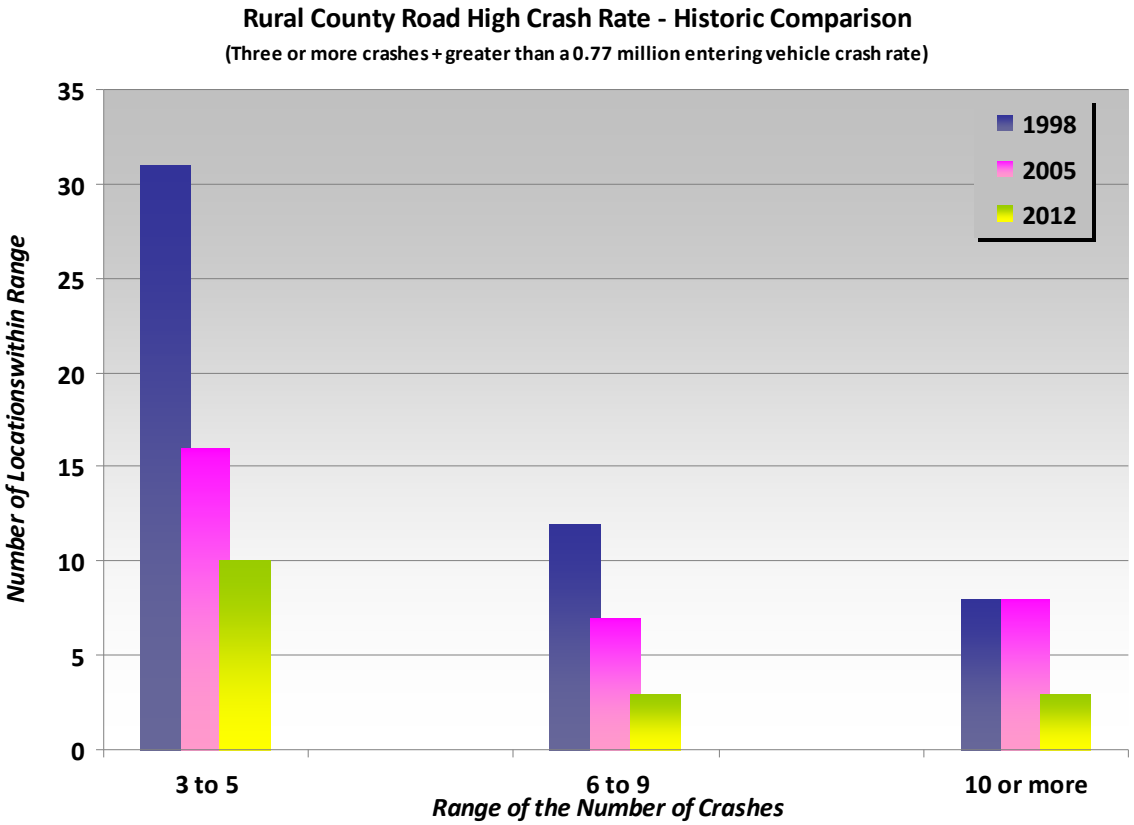
Table 5-17
Rural County Roads – Locations with three or more crashes AND crash rate greater than 0.77 crashes per million entering vehicles (MEV)

COUNTY ROADS ONLY - NO. OF CRASHES (JAN 2008 - DEC 2010)	NO. OF LOCATIONS
3 to 5	10
6 to 9	3
10 or more	3
Locations with 10 or more crashes	Number of Crashes / Rate per MEV
Cordon Rd and State St	26 / 1.11
Cordon Rd and Sunnyview Rd	18 / 0.91
River Rd and Clearlake/Quinaby Rds	10 / 2.54
COUNTY ROADS INTERSECTING STATE HWYS - NO. OF CRASHES (JAN 2008 - DEC 2010)	**NO. OF LOCATIONS**
3 to 5	0
6 to 9	7
10 or more	5
Locations with 10 or more crashes	Number of Crashes / Rate per MEV
I-5 at Ehlen Rd Interchange	29 / 0.93
Wilsonville-Hubbard Hwy at Ehlen Rd & Boones Ferry Rd	17 / 0.84
*Oregon 99E at Belle Passi	15 / 1.13
I-5 at Delaney Rd Interchange	15 / 1.21
Oregon 214 and Hobart Rd	12 / 1.31

* Safety improvements have been constructed during the analysis period; it is anticipated the number of crash incidences will be reduced in future analyses

Generally speaking, many of the locations that have historically exhibited higher crash numbers are once again showing up in the crash analysis. However, the number of locations that are experiencing crash rates of 0.77 MEV or greater have been reduced substantially since the 1998 and 2005 RTSP updates. The graph in **Table 5-18** provides a historic comparison of the number of high crash locations on rural Marion County roads from previous RTSP analyses periods (excluding County roads that intersect State Highways).

Table 5-18



5.3.6 Interstate 5 and Oregon 22 Detour Routes

Interstate 5 (I-5), a major national and state transportation corridor, passes through Marion County. Average annual daily traffic volumes on this portion of I-5 range from 57,000 to 83,000. These traffic volumes are ten to twenty times higher than typical traffic volumes on County arterials. Unfortunately, emergencies do occur that make it necessary to close I-5 and divert traffic onto other State highways and County roads. Detour routes are shown on **Figure 5-13.** When one of these detour routes is used, it is typically for relatively short time periods of two to six hours. During these detours, volumes on these roads are far greater than under normal operating conditions. This detouring of traffic often has a detrimental affect on communities surrounding the detour route during and immediately after the detour. When identifying, evaluating, and prioritizing potential projects, the use of it for a detour route is taken into consideration. Some minor improvements (such as signs, alternate signal timing, and gravel aprons to help trucks turn) have already been made on these routes because they serve as detour routes.

Detour routes have also been identified for Oregon 22, a major state highway of 'Statewide' significance. While these detours do not involve the magnitude of traffic that an I-5 detour does, they do cause times of unusually high traffic volume on the detour routes. Some of these detour routes are also used on a regular basis by trucks (classified as heavy haul loads), which must detour around height-restricted bridges on Oregon 22. Currently, there are four bridges between Aumsville and Salem that are height-restricted. A project to increase the vertical clearance on Oregon 22 is planned for 2012-2013. This project will reduce the amount of large commercial truck traffic that must utilize adjacent County facilities to transport their goods.

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 5-19** lists transportation providers that have service within Marion County. **Figure 5-14** depicts transit routes throughout Marion County.

Table 5-19
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

In addition to these providers, Cherriots Rideshare, managed by Salem-Keizer Transit provides ridematching 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. The region also has a variety of Park and Ride locations on the outer edges of the main cities or in more suburban areas. 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.

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 5-20**. All figures are for the fiscal year 2012:

Table 5-20
2012 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.

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.

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 shown on **Figure 5-15**. 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 River 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.

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, leaving 67 crossings in the rural areas that are within Marion County's jurisdiction. **Table 5-21** summarizes the number of crossings on each line and the type of traffic control that is present at each, with the 2005 number in parenthesis. Since 2005, all rural uncontrolled crossings under Marion County jurisdictions have been replaced as controlled crossings. One new signal with gates replaced the uncontrolled crossing on Butteville Rd south of St. Paul Highway along the Portland and Western (P&W) line. Other changes in the number of crossings with signals and gates are due to updated inventory data and not actual new installations. However, at the time of this update, a project to install a signal with gates on St. Louis Road near Tesch Lane, also along the P&W line, is in the planning stages (currently stop controlled). Each crossing is also identified on **Figure 5-12**. It is also worth noting that Marion County works in partnership with ODOT and other rail stakeholders to ensure all non-County maintained roadways at rail crossings have appropriate traffic control devices at these locations not listed in **Table 5-21** or **Figure 5-15**.

Table 5-21
Traffic Control at Rural Railroad Crossings

TRAFFIC CONTROL	P&W	SPRR/UPRR	WVRR	TOTAL
	2012 (2005)	2012 (2005)	2012 (2005)	2012 (2005)
Signals With Gates	9 (7)	11 (11)	3 (2)	23 (20)
Stop / Yield Signs	17 (16)	2 (2)	19 (11)	38 (29)
Crossbucks Only	0 (1)	0	0 (9)	0 (10)
Ped-Only Crossing	0 (0)	1 (1)	0 (0)	1 (1)
Bridges	4 (4)	1 (0)	0 (0)	5 (4)
TOTAL	**30 (28)**	**15 (16)**	**22 (23)**	**67 (66)**

5.6 AIR SERVICE

Facilities in Marion County that accommodate air travel include two public airports (Salem and Aurora), fifteen private airstrips, one Army National Guard heliport, and seven private heliports. **Table 5-22** contains a full listing of these facilities along with their location, runway dimensions, surface type, and public/private status.

Table 5-22
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
Art Brandt Airport	2 MI N of Jefferson	2000' x 80'	Turf	Private
Aurora State Airport	1 MI NW of Aurora	5004' x 100'	Asphalt	Public
Columbia Heliport	2 MI NW of Aurora	100' x 50'	Asphalt	Private
Curtright Airfield	3.5 MI NE of Jefferson	1800' x 40'	Asphalt	Private
Davidson Field Airport	6 MI NW of Jefferson	2500' x 100'	Turf	Private
Elkins Heliport	5 MI S of Salem	50' x 50'	Turf	Private
Finney Lake Airport	10 MI N of Salem	2200' x 100'	Turf	Private
Flying E Aerodrome	3 MI W of Aumsville	2300' x 45'	Turf	Private
Gilmour Agricultural Airport	5 MI NW of Jefferson	1800' x 60'	Turf	Private
Harchenko Industrial Airport	2 MI N of Brooks	2290' x 75'	Asphalt-Gravel	Private
Hatch Airport	4 MI SW of Stayton	2500' x 50'	Gravel	Private
Hollin Airport	3 MI NE of Brooks	1750' x 80'	Turf	Private
Iron Crown Airport	3.5 MI SE of Silverton	2000' x 50'	Turf	Private
Leedardi Air Field	6 MI NE of Salem	2000' x 70'	Turf	Private
McGee Airport	2 MI W of Donald	1900' x 60'	Turf	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
Smith Private Airport	1 MI S of Brooks	2500' x 60'	Turf	Private
South Hill Heliport	1 MI S of Brooks	60' x 60'	Asphalt	Private
Stuart's Airport	6 MI S of Salem	1000' x 30'	Turf	Private
Wagoner Airport	7 MI S of Salem	800' x 75'	Turf	Private
Wenger's Flying W Airport	5 MI NE of Salem	1500' x 30'	Turf	Private
Weyerhaeuser-Jefferson Heliport	6 MI E of Jefferson	112' x 100'	Gravel	Private

5.7 WATER TRANSPORTATION

The Willamette River, along the west boundary of Marion County, is the only waterway considered, or potentially, navigable in or adjacent to the County. The County has approximately 66 miles of frontage on the Willamette. The current regulatory status of the Willamette is an authorized six-foot channel of unspecified width extending from Oregon City to the mouth of the Santiam River. All of the County's frontage lies within this section. While the authorized channel indicates the potential for navigability, this channel has not been maintained for quite some time. Dredging ceased many years ago because its cost was greater than the resulting benefit. Extensive additional sedimentation has occurred since then, making dredging even more costly. Thus, while the potential does exist for the Willamette to be used for freight and passenger transportation, such navigability is not likely to be maintained by a government agency.

During the 1970s, waterborne commerce on the Willamette River between Portland and the Yamhill River (mile 56, just south of Newberg) increased, particularly below Oregon City, while traffic above the Yamhill River (such as towards the Salem area) decreased significantly. As a result, in 1973, the U.S. Army Corps of Engineers reduced dredging activity above the Yamhill River to minimal maintenance dredging and commercial traffic has not moved above the Yamhill River since that time. There has been no maintenance dredging above the Yamhill River since 1977. As of December 1, 2011, the United States Army Corps of Engineers has changed the status of the Willamette Falls Locks from a "caretaker status" to a "non-operational status", citing excessive corrosion with the potential for failure. Because the Willamette Falls Locks have primarily a recreational lock since the 1970's, the funding priority has been deemed low by the Corps and thus will be closed indefinitely at the time of this report.

A U.S. Army Corps of Engineers study was conducted in 1979 to determine the feasibility of maintaining a 3.5-foot deep channel from the Yamhill River to Corvallis. The annual cost of this dredging would be $1.2 million (1979 dollars), and it was determined that the project would not produce a net national benefit. The lack of clamoring by potential shippers for maintenance of such a channel reinforces the lack of economic feasibility of this channel maintenance. Environmental concerns are also a factor.

However, the possibility of waterborne freight and passenger movement on the Willamette does exist. It is possible that, during the timeframe of this plan, one or several commercial operations may become interested in the economic benefits that barge transportation offers. It is also possible that one or several commercial operations may become interested in operating excursion boats on large portions of the Willamette. It is possible that these economic benefits and opportunities may outweigh the costs of dredging such that maintaining a channel on part of the Willamette along Marion County becomes cost effective for them. Marion County would be supportive of such efforts to privately fund channel maintenance, provided environmental and other issues can be reasonably satisfied.

While there are shoals (portions of shallow water) and bars that block vessels during low water times (typically during the peak summer boating season), portions of the river between these bars are navigable. A sternwheeler excursion boat, the Willamette Queen, operates lunch, dinner, and sightseeing cruises in the vicinity of Salem. These cruises operate between Keizer (approx. river mile 81) and Eola (Western edge of West Salem, approx. river mile 88). Extensive recreational use of the river occurs near the various launching ramps and docks available at either side. However, the existence of shoaling and gravel bars makes use of the Willamette difficult for extended trips, such as those trips that would be necessary for freight transport to be feasible. Vessels (such as the excursion boat) can be brought upstream and/or sent downstream during the high water times that typically occur during the winter. However, since shoaling precludes long-distance travel by these vessels during most of the peak summer boating season, they

sometimes must wait for a few months if a long distance trip becomes necessary.

Construction of dams upstream has been effective for flood control, but limits the natural flow of spring floodwater that would naturally flush accumulated sediment out of the channel. While it is possible to move boats when flow levels are high, this is not a dependable mode of travel. Any dredging done to accomplish the opening of a channel would likely need to be repeated on a yearly basis as sediment accumulates. Thus, dredging would be quite costly to maintain, and these costs would likely be compounded by environmental impacts and issues that would need to be dealt with. At this time, dredging for purposes of longitudinal river travel would not be an efficient use of County funds.

5.7.1 Ferries

Waterway crossings of the Willamette River in Marion County includes two ferries that provide shuttle service to the public: the Wheatland Ferry and the Buena Vista Ferry. **Table 5-23** describes each of these ferries**.**

Table 5-23
Marion County Ferries

OPERATION	WHEATLAND FERRY	BUENA VISTA FERRY
Operation:	Year Round (closed on Christmas and Thanksgiving) Closes when river levels reach 15.8’	Year Round (closed on Christmas and Thanksgiving) Closes when river levels reach 15.8’
Hours:	Daily: 5:30 am to 9:45 pm	Daily: 7:00 am to 7:00 pm
Capacity:	9 cars - 80,000 lbs max	6 vehicles – 80,000 lbs max
Crossing Time (one-way):	2.0 min	4.0 min

The Wheatland Ferry is the larger of the two ferries and provides service to and from rural Yamhill County. It is mutually owned by Marion and Yamhill Counties. Operating expenses are also shared between Marion and Yamhill Counties, however, the ferry is operated by Marion County. It crosses the Willamette River and is located at the end of Matheny Road approximately five miles north of the City of Keizer. The ferry was built in 2002 and is operated by two on-board electric motors using overhead power. The ferry is also attached to a steel cable system overhead to keep the ferry in its intended path. The ferry operates daily for most of the year. It does not operate on Christmas day and Thanksgiving Day, closes for a number of days in the winter due to high water, and is also sometimes closed due to weather conditions or maintenance requirements. The capacity is nine cars and 50 passengers per trip, totaling 80,000 lbs. Annual ridership of the ferry is approximately 250,000 vehicles and a small number of cyclists and foot passengers. This is up from roughly 225,000 vehicles in 2005. The small increase in ridership could be attributed to many factors – decreased crossing times, an overall increase in vehicular volumes, and an increased awareness of the ferry operation.

The Buena Vista Ferry, located at the end of Buena Vista Road in southwest Marion County, connects Marion and Polk counties across the Willamette River just south of Independence. Founded in 1852, Buena Vista Ferry is one of the oldest continuous operating ferries in the state. The 1955 ferry was replaced in 2011 using over $3,000,000 in federal funding as part of the American Recovery and Reinvestment Act of 2009 (ARRA). The new ferry is powered by overhead electric power replacing the previous diesel generator. In addition to improved capacity and efficiency, the replacement project included improvements to the ferry termini approaches. This ferry is also attached to a steel cable system to keep the ferry on an appropriate path. While the Buena Vista Ferry has significantly lower vehicle use than the Wheatland Ferry it now operates year round, river levels permitting. Its operation is also susceptible to the impacts of the weather, river, and maintenance operations. The capacity of the Buena Vista Ferry is six cars and 50 passengers per trip, totaling 80,000 lbs. Annual ridership is approximately 20,000 vehicles and 3,000 cyclists and pedestrians. It is a vital transportation facility for the farming community in the area, and as such, the Oregon Department of Transportation partners with Marion County to cover net operating costs. Utilizing the ferry can save the end-user up to 40 miles (round-trip).

There is at least one privately operated, low-budget ferry that transports goods and people to an island in the river near Newberg. There are also several powerlines and pipelines crossing the river at various locations.

5.8 PIPELINE SERVICE

There are two major pipelines running through Marion County; a petroleum distribution line belonging to Sante Fe Pipeline Inc. (Kinder Morgan Energy) and a natural gas distribution line belonging to Northwest Pipeline Corp. Both pipelines run generally north and south through the County east of I-5. Northwest Natural Gas has a small network running through Salem to meet their customers' needs as well as a recently constructed pipeline extension connecting to their Mist, OR reservoirs. All three companies have metering stations throughout the county. Details of each of the pipelines, including maps of their specific locations, are not provided for security reasons, as requested by the pipeline companies. Information about these pipelines is provided in **Table 5-24**.

Table 5-24
Pipelines in Marion County

FEATURES	SANTE FE PIPELINE INC (KINDER MORGAN ENERGY)	WILLIAMS NORTHWEST PIPELINE CORP	NORTHWEST NATURAL GAS
Type:	Petroleum Distribution	Natural Gas Distribution	Natural Gas Distribution
Capacity:	40,000 barrels/day	60 million cu ft. / yr	375 million standard cubic feet per year
Pipeline Users:	Chevron, Exxon, Texaco, others	Northwest Natural Gas Co,	Northwest Natural Gas Co.
Starting Points:	Portland	Portland	Mist, OR storage fields
Ending Points:	Albany and Eugene	Grants Pass	Molalla Gate on Williams Energy System Pipeline
General Route:	Generally parallel to I-5 on the eastside of I-5	Generally parallel to I-5 on the eastside of I-5	Generally along the north east corner of the county line.
Future Expansion Plans:	Possibly add another pipeline N of Salem to Bend depending on future demand	No specific plans at this time	No specific plans at this time

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.

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. **Appendix E** provides 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.